

United States      Office of Air Quality Planning and Standards  
Environmental      Information Transfer and Program Integration Division  
Protection      Information Management Group  
Agency      Research Triangle Park, NC 27711

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# **AQS Data Coding Manual (AQ2)**

VERSION 1.2

Date: 8/29/02

Note to our users:

If you were familiar with the “old” mainframe system, you should recognize almost all of the old fields and terminology in the “new” system, because the “new” system still addresses the “old” monitoring program data needs.

The Appendices attached to this manual contain codes and descriptions from the various AQS tables. Over time, the list of code values may change, so we will routinely update this manual. Besides using these appendices, the current list of codes and descriptions can also be obtained by using drop-down lists in the AQS Client, or by using the powerful Oracle Discoverer tool.

We plan on making improvements to this manual in the future. And we hope this manual helps make the job of data entry a little more straightforward for you. If you have suggestions or see corrections that should be made, please let us know. Thank you for your cooperation, and your work to protect our Nation’s air quality.

- The Information Management Group, OAQPS, USEPA

# **AQS DATA CODING MANUAL**

**(AQ2)**

**VERSION 1.1**

**8/9/2002**

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF AIR QUALITY PLANNING AND STANDARDS  
INFORMATION TRANSFER AND PROGRAM INTEGRATION DIVISION  
INFORMATION MANAGEMENT GROUP  
RESEARCH TRIANGLE PARK, NC 27711**

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## **1.0 INTRODUCTION**

This manual explains how to use the Air Quality System (AQS). AQS is a computer-based system for handling the storage and retrieval of information pertaining to airborne pollutants. It is administered by the U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards(OAQPS) in Research Triangle Park, North Carolina.

Volume AQ1 contains the AQ data dictionary. This volume, AQ2, describes coding of air quality (AQ) data transactions.

This volume describes the various transactions used to create, update, or delete data in the Air Quality System. It is intended for those individuals who are responsible for maintaining the air quality data for their organizations.

The remainder of this volume is organized as follows:

Section 2 - Overview of Data Coding and Validation

Section 3 - Common Fields

Section 4 - Site Transactions (AA, AB, AC)

Section 5 - Monitor Transactions (MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK)

Section 6 - Raw Data Transactions (RC, RD)

Section 7 - Precision/Accuracy Transactions (RA, RP)

Section 8 - Annual Summary Data (RS)

## **2.0 OVERVIEW OF DATA CODING AND VALIDATION**

The Air Quality System contains data from state and local agencies, tribes, and federal organizations. It includes descriptions of air monitoring sites and monitoring equipment, measured concentrations of air pollutants and related parameters, and calculated summary and statistical information. This is called air quality (AQ) data throughout the rest of this volume.

Reporting agencies submit AQ data as formatted transactions using File Transfer Protocol (FTP). (Note that online data entry via data screens is also available in addition to using the batch process.) The user then employs AQS software to process the data through five steps, starting with FTP and ending with posting the data to the database.

### **2.1 AQS TRANSACTIONS**

Nineteen types of transactions are used to provide data and control information for updating the AQS database. Detailed instructions for coding individual transactions are presented in Chapters 3 through 7.

Appendix L presents the transaction formats. For each transaction, the fields are listed, along with required fields.

Appendix QQ shows which transactions are needed at a minimum to create site and monitor data. The required transactions, depending on type of data, are indicated.

### **2.2 GENERAL CODING INSTRUCTIONS**

Four general types of values are used to code air quality transactions: codes, dates, numeric data, and alphanumeric data.

#### **2.2.1 Codes**

Codes must be entered on transactions exactly as they are stored in the AQS tables. For example, a county code is three digits, and you must code all three digits of the code, including any leading zeros. The instructions for fields that take a code value include the term "code" in the list of field attributes. Code values are included in the Appendices of this volume. Also, the larger tables of code values are available as drop-down lists in the AQS Client software.

#### **2.2.2 Dates**

Dates are entered in YYYY, or YYYYMMDD format. YYYY is year, MM is month number, DD is day number. The instructions for fields that take a date value include the term "date" in the list of field attributes.

### **2.2.3 Numeric Values**

The instructions for fields that take a numeric value include the term "numeric" in the list of field attributes. The convention for number of digits and decimal places in this manual is: total number of digits, followed by a comma, followed by the number of decimal places. For example, 10,5 is a ten-digit number including five decimal places (nnnnn.nnnnn).

### **2.2.4 Alphanumeric Values**

The instructions for these fields include the term "character" in the list of field attributes. The length of allowable text is specified for each field.

### **2.2.5 Deletion of Non-Key Field Values Using Batch Transactions**

The deletion of non-key field values (without deleting the entire record) is no longer supported in the batch transaction mode. The use of asterisks in field values to signify field deletion is no longer supported. The AQS client now has an online maintain function which will allow interactive deletion of a single field. Many alphanumeric fields have a restricted list of values stored in the AQS tables; other alphanumeric fields are text fields in which any entries are valid. All of the values (codes) stored in the AQS code tables (formerly GEO Common tables) are capitalized. Therefore, when supplying code values on batch transactions, capitalization is required for successful processing.

### **2.2.6 Transaction Dependencies**

More than one transaction type may be required to insert (add) new data to the database. The transactions required will vary according to the type of data being inserted. Sometimes the value of a field may require an additional transaction. The transaction dependencies for the transactions needed to insert sites and monitors are shown in Appendix QQ.

### **2.2.7 Mandatory Fields**

Certain fields are mandatory (required), and they must have a value on the transaction. Some fields are always mandatory; other fields are mandatory only under certain conditions. For example, action code is always mandatory; it must be coded on every transaction. The coding instructions in subsequent chapters identify fields as Mandatory or Optional, and specify the conditions when a value is mandatory on the transaction. Also, the batch transaction formats contain notes showing various dependencies and required fields.

The old transaction formats are still supported for raw data, with the exception of non-key field deletions using asterisks. The old transaction formats are column-specified and no delimiters are



used. These transaction formats are all fixed at 80 characters in length.

The new transaction formats make use of field delimiters, rather than column position, to determine which field is to be processed. The delimiter character is the vertical bar “|”. Transactions, therefore, always start with the two-character transaction type, followed by the delimiter character, followed by the one-character action code (I, U, or D), followed by the delimiter character, followed by the next field (state), etc. The transactions must have the proper number of delimiters. If non-key fields are to be ignored, then the delimiters are included directly following the last delimiter (no spaces). For two transaction types (RD and RC), missing delimiters at the end of the transaction record are treated as null fields, i.e. the missing delimiters are assumed to be there by the batch update software. Again, this only applied to transaction types RD and RC.

### **3.0 COMMON FIELDS**

The 19 AQS transaction formats contain certain fields in common. These common fields are described in this chapter. The unique fields for each transaction are described in the following chapters.

#### **3.0.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

Valid transaction types are:

AA, AB, AC for site transactions

MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK for monitor transactions

RC, RD for raw data transactions (composite and hourly, daily, sub-hourly)

RA, RP for accuracy and precision transactions

RS for annual summary data

#### **3.0.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.

Transaction Type	Action Code	Database Processing
AA-AC	I	Insert a new site into the Site Table.
	U	Change or delete one or more column values within a Site Table row.
AA	D	Delete a site from the Site Table (you must also delete all of its monitors).
MA-MK	I	Insert a new monitor into the Site Table.
	U	Change or delete one or more column values within a Monitors Table row in the Site Table.
MA	D	Delete a monitor from the Site Table (you must delete all its raw data first).
RC, RD	I	Insert new values into the Raw Data Table.
	U	Change or delete existing values in the Raw Data Table.
	D	Delete existing values from the Raw Data Table.
RP	I	Insert precision data for collected samples.
	U	Change existing precision value(s).
	D	Delete existing precision values for a specified time interval.
RA	I	Insert a new accuracy value in the Accuracy Data Table for a specified time interval.
	U	Change an existing accuracy value in the Accuracy Data Table.
	D	Delete existing accuracy values for a specified time interval from the Accuracy Data Table.
RS	I	Insert summary data for a pollutant for a year (when no corresponding raw data exists).
	U	Change existing summary values.
	D	Delete existing summary values.

### **3.0.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

### **3.0.4 County Code**

Description:	A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.
Attributes:	Alphanumeric 3-digit code Mandatory
Coding Instructions:	Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table

### **3.0.5 Site ID**

Description:	<p>A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.</p> <p>A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.</p> <p>If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.</p>
Attributes:	Alphanumeric 4-character code Mandatory
Coding Instructions:	Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and

county code in the Sites Table.

#### **4.0 SITE TRANSACTIONS (AA, AB, AC)**

This set of three transactions is used to update Site information.

Type AA, Basic Site Information, performs data manipulation on the Sites and Agency Roles Tables, and contains site information in the following fields:

Transaction Type	Date Site Established
Action Code	Date Site Terminated
State Code	Zip Code
County Code	Congressional District
Site ID	Block
Latitude	Block Group
Longitude	Census Tract
UTM Zone	Class I Area
UTM Easting	Local Region
UTM Northing	Local Site Name
LDP Method of Collection	HQ Evaluation Date
LDP Horizontal Datum	Regional Evaluation Date
LDP Source Scale	Compass Sector
LDP Measurement Accuracy Value	Distance to City
LDP Vertical Measure	Type Meteorological Site
Time Zone	Meteorological Site ID
Support Agency	Distance to Meteorological Site
Street Address	Direction to Meteorological Site
City Code	Site
Urban Area Code	State or Local ID
AQCR	LDP Vertical Method
Land Use	LDP Vertical Datum
Location Setting	LDP Vertical Accuracy Value

Type AB, Site Street Information, performs data manipulation on the Tangent Roads Table, and contains site information in the following fields:

Transaction Type	Street Name
Action Code	Type Road
State Code	Traffic Count
County Code	Year of Traffic Count
Site ID	Direction to Street
Tangent Street Number	Source of Traffic Count

Type AC, Site Open Path Information, performs data manipulation on the Open Paths Table, and contains site information in the following fields:

Transaction Type	State Code
Action Code	County Code

Site ID  
Open Path Number  
Direction to Transmitter  
Beam Length  
Height of Transmitter

Height of Receiver  
Minimum Height  
Maximum Height  
Land Use Under Path

Insert transactions (i.e., transactions with action code I) are used to create a new site in the site file. When creating a new site, only one type AA is allowed, while multiple AB and AC transactions can be entered. Each AB transaction supplies information for one street surrounding a site. Each AC transaction supplies information for one open path monitor at a site.

Update transactions (i.e., transactions with action code U) are used to change the contents of site-specific fields in the Site Table. Blank fields on an Update transaction are ignored; they do not affect the Site Table. The values coded on an Update transaction replace the values of the corresponding columns in the Site Table. If no value existed previously, the value from the transaction is inserted into the row of the Site Table.

Delete transactions (i.e., transactions with action code D) are used to remove sites from the Site Table. Use a Delete action code D on Type AA to remove a site from the Site Table. A site may not be deleted if any monitors for that site remain in the Site Table. You must delete the site and its last monitor(s) at the same time.

Old transactions are converted for raw data transactions only, not for site, monitor, or summary.

See the Transaction Requirements Table in the Appendices to see which data input transactions are required to create sites. Also, the data input transaction formats are included as an appendix.

## **4.1 BASIC SITE INFORMATION - TRANSACTION TYPE AA**

The fields described in this section are validated for Insert (I) and Update (U) transactions, but not for Delete (D) transactions. The state, county, and site fields are always validated, as described in Section 3 above. For an Update transaction, fields other than state code, county code, and site ID must be not be blank.

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors.

See the data input transaction formats in the Appendices for a list of required fields on each transaction format.

### **4.1.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **4.1.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.



### **4.1.3 State Code**

- Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.
- Attributes: Alphanumeric  
2-character code  
Mandatory
- Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

### **4.1.4 County Code**

- Description: A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.
- Attributes: Alphanumeric  
3-digit code  
Mandatory
- Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

### **4.1.5 Site ID**

- Description: A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.
- A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **4.1.6 Latitude**

Description:           The monitoring site's angular distance north or south of the equator measured in decimal degrees. The associated sign specifies the direction of measurement, a positive number indicating north and negative indicating south. Locational data policy (LDP) requires that coordinates be provided for all sites.

Attributes:            Numeric  
                          14-digit number, including 6 decimal places (nnnnnnnn.nnnnnn)  
                          Optional

Coding Instructions: A site's coordinates may be given either as latitude/longitude or universal transverse mercator (UTM) coordinates, but not both. (When latitude is provided on the transaction, longitude must also be provided, but UTM values must not be provided.) All Sites Table rows are populated with both latitude/longitude and UTM coordinates. When latitude and longitude are provided on the transaction, the UTM coordinates are derived as the sites row is inserted or updated.

To insert or update, place a latitude value, in decimal degrees, in the sixth delimited field. For a coordinate above the equator, enter the value as a positive number. For a coordinate below the equator, enter the value as a negative number.

#### **4.1.7 Longitude**

Description:           The monitoring site's angular distance east or west of the prime meridian at Greenwich, measured in decimal degrees. The associated sign specifies the

direction of measurement, a positive number indicating east and negative indicating west. Locational data policy requires that coordinates be provided for all sites.

Attributes:                Numeric  
                                15-digit number, including 6 decimal places (nnnnnnnnnn.nnnnnn)  
                                Optional

Coding Instructions: A site's coordinates may be given either as latitude/longitude or UTM coordinates, but not both. (When longitude is provided on the transaction, latitude must also be provided, but UTM values must not be provided.) All Sites Table rows are populated with both latitude/longitude and UTM coordinates. When latitude and longitude are provided on the transaction, the UTM coordinates are derived as the sites row is inserted or updated.

To insert or update, place a longitude value, in decimal degrees, in the seventh delimited field. For a coordinate west of the prime meridian, enter the value as a positive number. For a coordinate east of the prime meridian, enter the value as a negative number.

#### **4.1.8 UTM Zone**

Description:            The zone of the universal transverse mercator (UTM) System in which a site is located. Locational data policy requires that coordinates be provided for all sites.

Attributes:                Numeric  
                                12-digit number (nnnnnnnnnnnn)  
                                Optional

Coding Instructions: A site's coordinates may be given either as latitude/longitude or UTM coordinates, but not both. (When UTM zone is provided on the transaction, UTM easting and UTM northing must also be provided, but latitude/longitude values must not be provided.) All Sites Table rows are populated with both latitude/longitude and UTM coordinates. When UTM coordinates are provided on the transaction, latitude and longitude are derived as the sites row is inserted or updated. To insert or update, place a UTM zone value in the eighth delimited field.

#### **4.1.9 UTM Easting**

Description:            The easting UTM coordinate, expressed in meters (i.e., the horizontal distance from the reference edge of the UTM zone,), for the site. Locational

data policy requires that coordinates be provided for all sites.

Attributes:           Numeric  
                          10-digit number, including two decimal places (nnnnnnnn.nn)  
                          Optional

Coding Instructions: A site's coordinates may be given either as latitude/longitude or UTM coordinates, but not both. (When UTM easting is provided on the transaction, UTM zone and UTM northing must also be provided, but latitude/longitude values must not be provided.) All Sites Table rows are populated with both latitude/longitude and UTM coordinates. When UTM coordinates are provided on the transaction, latitude and longitude are derived as the sites row is inserted or updated.

To insert or update, place a UTM easting value in the ninth delimited field.

#### **4.1.10 UTM Northing**

Description:           The northing UTM coordinate expressed in meters (i.e., for the Northern hemisphere, the vertical distance from the equator; for the Southern hemisphere, 10,000,000 minus the vertical distance from the equator) for the Site. Locational data policy requires that coordinates be provided for all sites.

Attributes:           Numeric  
                          10-digit number, including two decimal places (nnnnnnnn.nn)  
                          Optional

Coding Instructions: A site's coordinates may be given either as latitude/longitude or UTM coordinates, but not both. (When UTM northing is provided on the transaction, UTM zone and UTM easting must also be provided, but latitude/longitude values must not be provided.) All Sites Table rows are populated with both latitude/longitude and UTM coordinates. When UTM coordinates are provided on the transaction, latitude and longitude are derived as the sites row is inserted or updated.

To insert or update, place a UTM northing value in the tenth delimited field.

#### **4.1.11 LDP Method of Collection**

Description:           Method used to determine the latitude/longitude or UTM coordinates. Required by EPA locational data policy.

Attributes:           Alphanumeric

8-character code  
Mandatory

Coding Instructions: Place a valid LDP method of collection code in the eleventh delimited field. A code is valid if it is in the LDP Collection Methods Table.

#### **4.1.12 LDP Horizontal Datum**

Description: Specification of the edition of North American Datum used as the basis for determining the site coordinates. (The editions of North American Datum establish a network of monuments and reference points defining a mathematical surface from which geographic computations can be made.) Required by EPA locational data policy.

Attributes: Alphanumeric  
Up to 120 characters  
Mandatory

Coding Instructions: Place a valid LDP horizontal datum value in the twelfth delimited field. A value is valid if it is in the LDP Horizontal Data Table.

#### **4.1.13 LDP Source Scale**

Description: Identifies the ratio of the map or cartographic product to the true location. The data element for SCALE should be the X value of the 1:X ratio (e.g., if the scale is 1:24,000, the value of the scale data element should be 24,000). The United States Geological Survey 1:24,000 is usually the smallest reasonable scale for locating sub-facility points, such as stacks or pipes. The relative accuracies of maps as a locational tool decreases as the X value increases. Required by EPA locational data policy.

Attributes: Numeric  
12-digit number  
Mandatory

Coding Instructions: Place a valid LDP source scale value in the thirteenth delimited field.

#### **4.1.14 LDP Measurement Accuracy Value**

Description: Description of the accuracy of the site coordinates, as a range reported in meters. Only the least accurate measurement needs to be recorded, whether it is latitude or longitude (or UTM easting or northing). Required by EPA locational data policy.

Attributes:           Numeric  
                          10-digit number, including 2 decimal places (nnnnnnnn.nn)  
                          Mandatory

Coding Instructions:   Place the LDP measurement accuracy value in the fourteenth delimited field.

#### **4.1.15   LDP Vertical Measure**

Description:           The elevation, in meters, above or below mean sea level (MSL) of the site.  
                          Required by EPA locational data policy.

Attributes:            Numeric  
                          10-digit number, including 2 decimal places (nnnnnnnn.nn)  
                          Mandatory

Coding Instructions:   Place a numeric value in the fifteenth delimited field.

#### **4.1.16   Time Zone**

Description:           A standard time zone, as established by section 1 of the Standard Time Act,  
                          as amended by section 4 of the Uniform Time Act of 1966 (15 U.S.C 261).

Attributes:            Alphanumeric  
                          Up to 30 characters  
                          Optional

Coding Instructions:   To insert or update a time zone, place a valid value in the sixteenth delimited  
                          field. A time zone value is valid if it exists in combination with state code  
                          in the State Time Zones Table.

#### **4.1.17   Support Agency**

Description:           Identifies the agency responsible for the operation of the monitoring site.

Attributes:            Alphanumeric  
                          4-character code  
                          Optional (Mandatory for Insert)

Coding Instructions:   To insert or update, place a valid agency code in the seventeenth delimited  
                          field. A support agency value is valid if it exists in combination with the  
                          state code value in the State Agencies Table.

#### **4.1.18 Street Address**

Description: Specifies the building/street location of the monitoring site.

Attributes: Alphanumeric  
Up to 2000 characters  
Mandatory

Coding Instructions: Place street address text in the eighteenth delimited field. Any non-blank value is valid.

#### **4.1.19 City Code**

Description: Specification of the city within whose legal boundaries the monitoring site is located.

Attributes: Alphanumeric  
5-character code  
Mandatory

Coding Instructions: Place a valid FIPS city code value in the nineteenth delimited field. A city code value is valid if it exists in combination with state code and county code in the County Cities Table. If the site is not within a city, use code 00000.

#### **4.1.20 Urban Area Code**

Description: Specification of the urbanized area within which the monitoring site is located. An urbanized area is a US Census Bureau demographic entity that comprises a place and the adjacent densely-settled surrounding territory that together have a minimum population of 50,000 people.

Attributes: Alphanumeric  
4-character code  
Mandatory

Coding Instructions: Place a valid urban area code value in the twentieth delimited field. An urban area code value is valid if it exists in combination with state code in the State Urbanized Areas Table. If the monitoring site is not within an urbanized area, use code 0000.

#### **4.1.21 AQCR**

Description: Specifies in which of the 247 air quality control regions the monitoring site is located.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: To insert or update AQCR, place a valid AQCR code in the twenty-first delimited field. A valid AQCR code is one that, in combination with state code and county code, exists in the AQCR Counties Table.

#### **4.1.22 Land Use**

Description: Categorization of the prevalent land use within 1/4 mile of the monitoring site.

Attributes: Alphanumeric  
Up to 20 characters  
Mandatory

Coding Instructions: Place a valid land use type term in the twenty-second delimited field. A land use term is valid if it exists in the Land Use Types Table.

#### **4.1.23 Location Setting**

Description: A description of the environmental setting within which the site is located.

Attributes: Alphanumeric  
Up to 50 characters  
Mandatory

Coding Instructions: Place a valid location setting term in the twenty-third delimited field. A location setting term is valid if it exists in the Location Settings Table.

#### **4.1.24 Date Site Established**

Description: The date on which an air monitoring site began collecting air quality data.

Attributes: Date  
8-digit date



Optional

Coding Instructions: Place a date, using the format YYYYMMDD, in the twenty-fourth delimited field. The date must be between January 1, 1957 and a year after the current date.

#### **4.1.25 Date Site Terminated**

Description: The date on which a monitoring site ceased to operate.

Attributes: Date  
8-digit date  
Optional

Coding Instructions: Place a date, using the format YYYYMMDD, in the twenty-fifth delimited field. The date must be between January 1, 1957 and the current date, and must be greater than date site established. All monitors at a site must have a date sampling ended before a site can be terminated.

#### **4.1.26 Zip Code**

Description: Specification of the US Postal Service zip code used to address the monitoring site.

Attributes: Alphanumeric  
5- or 9-character code  
Optional

Coding Instructions: Place a valid 5-digit or 9-digit zip code in the twenty-sixth delimited field. A zip code value is valid if it exists in combination with state code and county code in the County Zip Codes Table.

#### **4.1.27 Congressional District**

Description: Specification of the Congressional district within which the site is located.

Attributes: Numeric  
2-digit code (nn)  
Optional

Coding Instructions: Place a valid Congressional district number in the twenty-seventh delimited field. A Congressional district value is valid if it exists in combination with state code in the Congressional Districts Table. If there is only one Congressional district in a state (in which case the district is not numbered),

enter the value of 1.

#### **4.1.28 Block**

Description: Specification of the US Census Bureau block within which the site is located.

Attributes:           Alphanumeric  
                          4-character code  
                          Optional

Coding Instructions: Block information must be submitted in conjunction with block group and census tract. Place a valid block number in the twenty-eighth delimited field. A block value is valid if it exists in combination with state code, county code, block group, and census tract in the Blocks Table.

#### **4.1.29 Block Group**

Description:           Specification of the US Census Bureau block group within which the site is located.

Attributes:           Alphanumeric  
                          1-character code  
                          Optional

Coding Instructions: Block group information must be submitted in conjunction with block and census tract. Place a valid block group number in the twenty-ninth delimited field. A block group value is valid if it exists in combination with state code, county code, block, and census tract in the Blocks Table.

#### **4.1.30 Census Tract**

Description:           Specification of the US Census Bureau census tract/block numbering area within which the site is located.

Attributes:           Alphanumeric  
                          6-character code  
                          Optional

Coding Instructions: Census tract information must be submitted in conjunction with block and block group. Place a valid census tract code in the thirtieth delimited field. A census tract value is valid if it exists in combination with state code, county code, block, and block group in the Blocks Table.

#### **4.1.31 Class I Area**

- Description: Specification of the class one area within which the site is located. A class one area is a geographic area recognized by the EPA as being of the highest environmental quality and requiring maximum protection.
- Attributes: Alphanumeric  
8-character code  
Optional
- Coding Instructions: Place a valid class one area code in the thirty-first delimited field. A class one area code is valid if it exists in the Class One Areas Table.

#### **4.1.32 Local Region**

- Description: Specification of a state-specific geographic/administrative area within which the site is located.
- Attributes: Alphanumeric  
8-character code  
Optional
- Coding Instructions: Place a valid local region code in the thirty-second delimited field. A local region code is valid if it exists in combination with state code in the Local Regions Table.

#### **4.1.33 Local Site Name**

- Description: The locally defined name of the site.
- Attributes: Alphanumeric  
Up to 70 characters  
Optional
- Coding Instructions: Place a text description of the locally-defined site name in the thirty-third delimited field. Any non-blank value is valid.

#### **4.1.34 HQ Evaluation Date**

- Description: A specification of the date on which the most recent headquarters evaluation of the site occurred.

Attributes:           Date  
                          8-digit date  
                          Optional

Coding Instructions: Place a date, in the format YYYYMMDD, in the thirty-fourth delimited field. To be valid, HQ evaluation date must be between January 1, 1980 (when the National Air Monitoring Sites Regulations were published) and the current date.

#### **4.1.35 Regional Evaluation Date**

Description:           A specification of the date on which the most recent regional evaluation of the site for siting criteria occurred.

Attributes:           Date  
                          8-digit date  
                          Optional

Coding Instructions: Place a date, in the format YYYYMMDD, in the thirty-fifth delimited field. To be valid, regional evaluation date must be between January 1, 1980 (when the National Air Monitoring Sites Regulations were published) and the current date.

#### **4.1.36 Compass Sector**

Description:           A representation of the true, as opposed to magnetic, direction of the site from the central business district. If the site is within the central business district, it is a representation of the direction the probe faces.

Attributes:           Alphanumeric  
                          3-character code  
                          Optional

Coding Instructions: Place a valid compass sector value in the thirty-sixth delimited field. A compass sector value is valid if it exists in the Compass Sectors Table.

#### **4.1.37 Distance to City**

Description:           The distance, in kilometers, to the site from the center of the downtown central business district of the city in which the site is located.

Attributes:           Numeric  
                          10-digit number, including two decimal places (nnnnnnnn.nn)

Optional

Coding Instructions: Place a numeric value greater than 0 and less than 1000 in the thirty-seventh delimited field.

#### **4.1.38 Type Meteorological Site**

Description: The type of meteorological station identified for the monitoring site. Required for sites with monitors in a Photochemical Assessment Monitoring System network.

Attributes: Alphanumeric  
Up to 20 characters  
Optional

Coding Instructions: Place a valid type meteorological site in the thirty-eighth delimited field. A type meteorological site value is valid if it exists in the Met Site Types Table.

#### **4.1.39 Meteorological Site ID**

Description: Identification of the AQS site ID where meteorological data is collected, if not collected at this site.

Attributes: Alphanumeric  
9-character code  
Optional

Coding Instructions: Place a valid AQS site ID in the thirty-ninth delimited field. The format for AQS site ID is a joining of a FIPS state code (2 numeric characters), a FIPS county code (3 numeric characters), and 4-digit site ID. A meteorological site ID value is valid if it represents an existing row on the Sites Table and type meteorological site is other AQS site.

#### **4.1.40 Distance to Meteorological Site**

Description: The distance of the associated meteorological site from the air quality monitoring site, in meters. This information is required if the site has monitors that are part of a Photochemical Assessment Monitoring System network. The associated site need not be a AQS site.

Attributes: Numeric  
10-digit number, including two decimal places (nnnnnnnnn.nn)  
Optional

Coding Instructions: Place a valid numeric distance to meteorological site value in the fortieth delimited field. The distance to meteorological site is valid if it is greater than 0 and type meteorological site is not on-site met equip and not on-site UA met. A distance to meteorological site value may be nullified, if type meteorological site is nullified, on-site met equip, or on-site UA met.

#### **4.1.41 Direction to Meteorological Site**

Description: A representation of the true, as opposed to magnetic, direction of the meteorological site from this site.

Attributes: Alphanumeric  
3-character code  
Optional

Coding Instructions: Place a valid direction to met site value in the forty-first delimited field. A direction to met site value is valid if it exists in the Compass Sectors Table and type meteorological site is not on-site met equip and not on-site UA met. A direction to met site value may be nullified, if type meteorological site is nullified, on-site met equip or on-site UA met.

#### **4.1.42 State or Local ID**

Description: Identification code used by a state or local agency, if different from the AQS site ID.

Attributes: Alphanumeric  
Up to 40 characters  
Mandatory

Coding Instructions: Place an alphanumeric value in the forty-second delimited field. No edit checks are performed.

#### **4.1.43 LDP Vertical Method**

Description: Method used to determine the LDP vertical measure.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid LDP vertical method code in the forty-third delimited field.

#### **4.1.44 LDP Vertical Datum**

- Description: Specification of the edition of North American Datum used as the basis for determining the site coordinates. (The editions of North American Datum establish a network of monuments and reference points defining a mathematical surface from which geographic computations can be made.) Required by EPA locational data policy.
- Attributes: Alphanumeric  
Up to 120 characters  
Mandatory
- Coding Instructions: Place a valid LDP vertical datum value in the forty-fourth delimited field. A value is valid if it is in the LDP Vertical Data Table.

#### **4.1.45 LDP Vertical Accuracy Value**

- Description: Description of the accuracy of the LDP vertical measure, reported in meters. Required by EPA locational data policy.
- Attributes: Numeric  
10-digit number including 2 decimal places (nnnnnnnn.nn)  
Mandatory
- Coding Instructions: Place the LDP vertical accuracy value in the forty-fifth delimited field.

## **4.2 SITE STREET INFORMATION - TRANSACTION TYPE AB**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors.

See the data input transaction formats in the Appendices for a list of required fields for each transaction format.

### **4.2.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **4.2.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.

### **4.2.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory



Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **4.2.4 County Code**

Description: A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes: Alphanumeric  
3-digit code  
Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **4.2.5 Site ID**

Description: A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes: Alphanumeric  
4-character code

Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **4.2.6 Tangent Street Number**

Description: Identifies the number of the street around the site for which the data are being submitted. If street name, type road, traffic flow, year of traffic flow, or direction to street is valued, street number must be valued. Street number is used to associate detailed street information for the site to streets closest to the monitors at this site.

Attributes: Numeric  
12-digit number (nnnnnnnnnnnn)  
Mandatory

Coding Instructions: Place a valid number in the sixth delimited field. A tangent street number is valid if it exists in combination with state code, county code, and site ID on the Tangent Roads Table.

#### **4.2.7 Street Name**

Description: The name of the street closest to the monitoring site.

Attributes: Alphanumeric  
Up to 50 characters  
Mandatory

Coding Instructions: Place the street name in the seventh delimited field.

#### **4.2.8 Type Road**

Description: The type of road or street being described.

Attributes: Alphanumeric  
Up to 20 characters  
Mandatory

Coding Instructions: Place a valid type road term in the eighth delimited field. A type road value is valid if it exists on the Road Types Table.

#### **4.2.9 Traffic Count**

Description: An estimate of the daily traffic volume on the roadway.

Attributes: Numeric  
12-digit number  
Mandatory

Coding Instructions: Place a valid traffic count in the ninth delimited field. A traffic count value is valid if it is greater than 0.

#### **4.2.10 Year of Traffic Count**

Description: The year when the traffic count value was estimated.

Attributes: Date  
4-digit date  
Mandatory

Coding Instructions: Place a valid year of traffic count in the tenth delimited field. A year of traffic count value is valid if it is greater than 1957 and less than or equal to the current year.

#### **4.2.11 Direction to Street**

Description: Identification of the direction from the site to the street at its nearest point.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid direction to street in the eleventh delimited field. A direction to street value is valid if exists on the Compass Sectors Table.

#### **4.2.12 Source of Traffic Count**

Description: The method by which the traffic volume/flow count was obtained.

Attributes: Numeric  
10-digit number  
Optional

Coding Instructions: Enter a valid source of traffic count code in the twelfth delimited field. A

source of traffic count value is valid if it exists on the Traffic Volume Sources Table.

### **4.3 SITE OPEN PATH INFORMATION - TRANSACTION TYPE AC**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields for each transaction format.

#### **4.3.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

#### **4.3.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

#### **4.3.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists

in the States Table.

#### **4.3.4 County Code**

Description:	A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.
Attributes:	Alphanumeric 3-digit code Mandatory
Coding Instructions:	Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **4.3.5 Site ID**

Description:	<p>A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.</p> <p>A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.</p> <p>If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.</p>
Attributes:	Alphanumeric 4-character code Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **4.3.6 Open Path Number**

Description: A unique numeric identifier for the individual open path at a site. Each open path represents a different monitor.

Attributes: Numeric  
2-digit number  
Mandatory

Coding Instructions: Place a valid open path number in the sixth delimited field. An open path number value is valid if it is between 1 and 99.

#### **4.3.7 Direction to Transmitter**

Description: Identification of the direction of the transmitter from the receiver at the site.

Attributes: Alphanumeric  
3-characters  
Mandatory

Coding Instructions: Place a valid direction to transmitter in the seventh delimited field. A direction to transmitter value is valid if it exists on the Compass Sectors Table.

#### **4.3.8 Beam Length**

Description: The length of the beam projected between the transmitter and the receiver at the site, in meters.

Attributes: Numeric  
10-digit number, including 2 decimal places (nnnnnnnnn.nn)  
Mandatory

Coding Instructions: Place a valid beam length in the eighth delimited field. A beam length value is valid if it is greater than 0.

#### **4.3.9 Height of Transmitter**

Description: The height of the transmitter above the ground, in meters.

Attributes: Numeric  
10-digit number, including 2 decimal places (nnnnnnnnn.nn)  
Mandatory

Coding Instructions: Place a valid height of transmitter in the ninth delimited field. A height of transmitter value is valid if it is greater than 0.

#### **4.3.10 Height of Receiver**

Description: The height of the receiver above the ground, in meters.

Attributes: Numeric  
10-digit number, including 2 decimal places (nnnnnnnnn.nn)  
Mandatory

Coding Instructions: Place a valid height of receiver in the tenth delimited field. A height of receiver value is valid if it is greater than 0.

#### **4.3.11 Minimum Height**

Description: The height of the beam (at the lowest point from the ground) being projected between the receiver and transmitter at the site, in meters.

Attributes: Numeric  
10-digit number, including 2 decimal places (nnnnnnnnn.nn)  
Mandatory

Coding Instructions: Place a valid minimum height value in the eleventh delimited field. A minimum height value is valid if it is greater than 0 and less than maximum height.

#### **4.3.12 Maximum Height**

Description: The height of the beam (at the highest point from the ground) being projected between the receiver and transmitter at the site, in meters.

Attributes: Numeric  
10-digit number, including 2 decimal places (nnnnnnnnn.nn)  
Mandatory



Coding Instructions: Place a valid Maximum height value in the twelfth delimited field. A maximum height value is valid if it is greater than 0 and greater than minimum height.

#### **4.3.13 Land Use under Path**

Description: Identification of the prevalent land use under the path of the beam being projected between the receiver and transmitter at the site.

Attributes:           Alphanumeric  
                          Up to 20 characters  
                          Mandatory

Coding Instructions: Place a valid land use under path description in the thirteenth delimited field. A land use under path value is valid if it exists on the Land Use Types Table.

#### **4.4 SITE COMMENTS (Online Update Only)**

Description: Site comments is a free-format field that may be used in any way desired. It is commonly used to describe special features of a site. Multiple lines can be created by incrementing the sequence number. Online update only.

Attributes: 68 characters  
Optional

Coding Instructions: To Insert or Update, place the appropriate text in the comment fields using the maintain screen.

## **5.0 MONITOR TRANSACTIONS (MA - MK)**

This set of eleven transactions is used to update monitor information in the site file.

Type MA, Basic Monitor Information, performs data manipulation on the Monitors and Pollutant Area Monitors Tables, and contains the following fields:

Transaction Type	Vertical Distance
Action Code	Surrogate Flag Indicator
State Code	Unrestricted Air Flow Indicator
County Code	Sample Residence Time
Site ID	Worst Site Type
Parameter	Applicable NAAQS Indicator
POC	Spatial Average Indicator
Project Class	Schedule Exemption Indicator
Dominant Source	Community Monitoring Zone
Measurement Scale	Pollutant Area Code – 1
Open Path Number	Pollutant Area Code – 2
Probe Location Code	Pollutant Area Code – 3
Probe Height	Pollutant Area Code – 4
Horizontal Distance	Pollutant Area Code – 5

Type MB, Monitor Sampling Periods, performs data manipulation on the Sample Periods Table, and contains the following fields:

Transaction Type	Parameter
Action Code	POC
State Code	Date Sampling Began
County Code	Date Sampling Ended
Site ID	

Type MC, Monitor Type Information, performs data manipulation on the Monitor Type Assignments Table, and contains the following fields:

Transaction Type	Parameter
Action Code	POC
State Code	Monitor Type
County Code	Monitor Type Begin Date
Site ID	Monitor Type End Date

Type MD, Monitor Agency Role, performs data manipulation on the Agency Roles Table, and contains the following fields:

Transaction Type  
Action Code  
State Code  
County Code  
Site ID  
Parameter

POC  
Agency Role Name  
Agency Code  
Begin Date  
End Date

Type ME, Monitoring Objective Information, performs data manipulation on the Monitor Objectives Table, and contains the following fields:

Transaction Type  
Action Code  
State Code  
County Code  
Site ID  
Parameter

POC  
Monitor Objective  
Urban Area Represented  
MSA Represented  
CMSA Represented

Type MF, Monitor Sampling Schedule, performs data manipulation on the Req Coll Frequencies and Sample Schedules Tables, and contains the following fields:

Transaction Type  
Action Code  
State Code  
County Code  
Site ID  
Parameter  
POC  
RCF Code  
RCF Begin Date  
RCF End Date  
Number of Samples - January

Number of Samples - February  
Number of Samples - March  
Number of Samples - April  
Number of Samples - May  
Number of Samples - June  
Number of Samples - July  
Number of Samples - August  
Number of Samples - September  
Number of Samples - October  
Number of Samples - November  
Number of Samples - December

Type MG, Monitor Street Description, performs data manipulation on the Monitor Tangent Roads Table, and contains the following fields:

Transaction Type  
Action Code  
State Code  
County Code  
Site ID

Parameter  
POC  
Tangent Street Number  
Distance from Monitor

Type MH, Monitor Obstruction Information, performs data manipulation on the Probe Obstructions

Table, and contains the following fields:

Transaction Type	POC
Action Code	Type Obstruction
State Code	Direction from Monitor
County Code	Distance to Monitor
Site ID	Height of Obstruction
Parameter	

Type MI, Monitor Regulatory Compliance, performs data manipulation on the Regulation Compliances Table, and contains the following fields:

Transaction Type	Parameter
Action Code	POC
State Code	Monitor Regulation Code
County Code	Compliance Indicator
Site ID	Compliance Date

Type MJ, Monitor Collocation Period, performs data manipulation on the Monitor Collocations Table, and contains the following fields:

Transaction Type	POC
Action Code	Collocation Begin Date
State Code	Collocation End Date
County Code	Distance from Primary Monitor
Site ID	Primary Monitor Indicator
Parameter	

Type MK, Monitor Protocol performs data manipulation on the Monitor Protocols Table, and contains the following fields:

Transaction Type	Alternate MDL ID
Action Code	Sample Duration
State Code	Unit
County Code	Method
Site ID	Collection Frequency
Parameter	Composite Type
POC	Minimum Detect Value

Transactions are used to create a monitor that does not already exist on the Site Table. Transaction Types MA, MB, MC, MD, and ME are required to create a new monitor for criteria pollutants. To Insert a new monitor, either its parent site must already exist in the database, or the parent site must

be created at the same time as the site transactions in the batch file. See the transaction requirements and data input formats in the Appendices for specific requirements.

Transactions are used to remove a monitor from the site file. The Delete action code is allowed only for type AA transactions.

Transactions are used to change information in the site file for existing monitors. The values coded on an Update transaction replace the values of the corresponding fields in the monitor record of the site file. If no value existed previously, the value from the transaction is inserted into the monitor record. Some fields are required, and cannot be deleted. They are identified in the coding instructions that follow, and in transaction formats.

## **5.1 BASIC MONITOR INFORMATION - TRANSACTION TYPE MA**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors.

See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

### **5.1.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.1.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.

### **5.1.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.1.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.1.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing



for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **5.1.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.1.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.1.8 Project Class**

Description:           The designation of the type of sampling performed by the monitor.

Attributes:            Alphanumeric  
                          8-character code  
                          Optional

Coding Instructions: Place a valid project class code in the eighth delimited field. A project class value is valid if it exists in the Project Types Table.

#### **5.1.9 Dominant Source**

Description:           Indication of the primary source of the pollutant begin measured.

Attributes:            Alphanumeric  
                          Up to 20 characters  
                          Optional

Coding Instructions: Place a valid dominant source term in the ninth delimited field. A dominant source value is valid if it exists in the Dominant Sources Table.

#### **5.1.10 Measurement Scale**

Description:           A denotation of the geographic scope of the air quality measurements made by the monitor. The implication is that the same measurement made elsewhere within the measurement scale would produce an equivalent result to that produced at the monitoring site.

Attributes:            Alphanumeric  
                          Up to 20 characters  
                          Optional

Coding Instruction: Place a valid measurement scale term in the tenth delimited field. A measurement scale term is valid if it exists in the Measurement Scales Table.

### **5.1.11 Open Path Number**

Description: The specific open path number registered at the site that the monitoring data and monitor represent. The number must be registered at the site before it can be identified by the monitor.

Attributes: Numeric  
2-digit code  
Optional

Coding Instructions: Place a valid open path number in the eleventh delimited field. An open path number value is valid if it exists in combination with state code, county code, and site ID on the Open Paths Table.

### **5.1.12 Probe Location Code**

Description: Identification of the location of the sampling probe.

Attributes: Alphanumeric  
Up to 20 characters  
Optional

Coding Instructions: Place a valid probe location term in the twelfth delimited field. A probe location term is valid if it exists in the Probe Locations Table.

### **5.1.13 Probe Height**

Description: The height of the sampling probe from the ground in meters.

Attributes: Numeric  
10-digit number, including 2 decimal places (nnnnnnnn.nn)  
Optional:  
    Required on Insert  
    Optional on Update  
    May not be Deleted

Coding Instructions: Place a valid probe height value in the thirteenth delimited field. A probe height value is valid if it is greater than 0.

#### **5.1.14 Horizontal Distance**

Description: The horizontal distance, in meters, of the probe from its supports.

Attributes: Numeric  
10-digit number, including two decimal places (nnnnnnnnn.nn)  
Optional:  
    Required on Insert  
    Optional on Update  
    May not be Deleted

Coding Instructions: Place a valid probe horizontal distance value in the fourteenth delimited field. A horizontal distance value is valid if it is greater than 0.

#### **5.1.15 Vertical Distance**

Description: The vertical distance, in meters, of the probe from its supports.

Attributes: Numeric  
10-digit number, including two decimal places (nnnnnnnnn.nn)  
Optional:  
    Required on Insert  
    Optional on Update  
    May not be Deleted

Coding Instructions: Place a valid probe vertical distance value in the fifteenth delimited field. A vertical distance value is valid if it is greater than 0.

#### **5.1.16 Surrogate Flag Indicator**

Description: Indicates whether a TSP monitor serves as a surrogate monitor for PM-10.

Attributes: 1-character code: Y or N  
Optional:  
    Required for TSP Insert  
    Optional for TSP Update  
    Prohibited if not TSP  
    May not be Deleted

Coding Instructions: If parameter is 11101 and the monitor is a surrogate for PM-10, then place the value Y in the sixteenth delimited field.  
If parameter is not 11101, or parameter is 11101, but the monitor is not a surrogate for PM-10, place nothing or N in the sixteenth delimited field.

### **5.1.17 Unrestricted Air Flow Indicator**

Description: Indication of whether the flow of air to the monitor is restricted.

Attributes: 1-character code: Y, N, or W  
Optional

Coding Instructions: Place a valid unrestricted air flow indicator in the seventeenth delimited field. An unrestricted air flow indicator value is valid if it is Y (for yes), N (for no), or W (for waiver).

### **5.1.18 Sample Residence Time**

Description: The time in seconds for the sample to move from the probe inlet to the monitor.

Attributes: Numeric  
10-digit number, including two decimal places (nnnnnnnn.nn)  
Optional

Coding Instructions: Place a valid sample residence time in the eighteenth delimited field. A sample residence time value is valid if it is greater than 0.

### **5.1.19 Worst Site Type**

Description: Within a particular monitoring area, those monitors with the highest PM-10 concentrations must have their worst site type set to 1, and are expected to monitor at the recommended collection frequency. Other monitors must be classified as either: 1) not worst site monitors, or 2) monitoring on an accelerated schedule, but not at the recommended collection frequency.

Attributes: Alphanumeric  
8-character code  
Optional:  
    Required for PM-10 Insert  
    Optional for PM-10 Update  
    Prohibited if not PM-10  
    May not be Deleted

Coding Instructions: Place a valid worst site type code in the nineteenth delimited field.

For an insert, a worst site type value is valid if it exists in the Worst Site Types Table and one of the following is populated with a monitoring area code: pollutant area code 1, pollutant area code 2, pollutant area code 3,

pollutant area code 4, or pollutant area code 5.

For an update, a worst site type value is valid if it exists in the Worst Site Types Table and one of the following is populated with a monitoring area code: pollutant area code 1, pollutant area code 2, pollutant area code 3, pollutant area code 4, or pollutant area code 5, or there is an existing monitoring area code for the monitor on the Pollutant Area Monitors Table. If either pollutant area code 1, pollutant area code 2, pollutant area code 3, pollutant area code 4, or pollutant area code 5 are populated with a monitoring area code, then worst site type is required.

#### **5.1.20 Applicable NAAQS (National Ambient Air Quality Standard Indicator)**

Description: Indicates whether the data from a monitor in a monitor planning area should be compared to either the short-term or annual NAAQS, or both.

Attributes: Alphanumeric  
3-character code  
Optional

Coding Instructions: Place a valid applicable NAAQS indicator in the twentieth delimited field. An applicable NAAQS Indicator value is valid if it is S (for short-term), A (for annual), or B (for both), and one of the following is populated with a monitor planning area code: pollutant area code 1, pollutant area code 2, pollutant area code 3, pollutant area code 4, or pollutant area code 5.

#### **5.1.21 Spatial Average Indicator**

Description: Indicates whether spatial averaging is to be performed for the all individual annual weighted means for sites that are flagged and in the same community monitoring zone.

Attributes: Alphanumeric  
1-character code  
Optional

Coding Instructions: Place a valid spatial average indicator in the twenty-first delimited field. A spatial average indicator value is valid if:

- 1) it is Y (for yes), or N (for no),
- 2) one of the following is populated with a monitor planning area code: pollutant area code 1, pollutant area code 2, pollutant area code 3, pollutant area code 4, or pollutant area code 5, and
- 3) community monitoring zone is assigned a value.

### **5.1.22 Schedule Exemption Indicator**

- Description: Indicates whether the sampling schedule differs from that required by the standard by approval of the Regional Administrator.
- Attributes: 1-character code: Y or N  
Optional
- Coding Instructions: Place a valid schedule exemption indicator in the twenty-second delimited field. A schedule exemption indicator value is valid if it is Y (for yes) or N (for no), and one of the following is populated with a monitor planning area code: pollutant area code 1, pollutant area code 2, pollutant area code 3, pollutant area code 4, or pollutant area code 5.

### **5.1.23 Community Monitoring Zone**

- Description: Sequential number assigned to an optional averaging area with an established, defined boundary within a monitor planning area that has relatively uniform concentration of annual PM-2.5. Community monitoring zones do not cross geographical lines.
- Attributes: Numeric  
4-digit number  
Optional
- Coding Instructions: Place a valid community monitoring zone number in the twenty-third delimited field. A community monitoring zone value is valid if one of the following is populated with a monitor planning area code: pollutant area code 1, pollutant area code 2, pollutant area code 3, pollutant area code 4, or pollutant area code 5.

### **5.1.24 Pollutant Area Code 1, 2, 3, 4, or 5**

- Description: Designation of a pollutant areas to which the monitor is assigned. Pollutant areas are geographic areas defined by a program office in which a certain pollutant should be closely watched. Most are problem or non-attainment areas, but attainment areas requiring special attention may also be defined. Types of pollutant areas are status areas, monitoring areas, and monitor planning areas.
- Attributes: Alphanumeric  
5-character code  
Optional

Coding Instructions: The transaction format allows the designation of up to five pollutant areas. The delimited fields allocated for these designations are positions 24-28. Assignments should be made in sequence, i.e., do not use position 25, if you have not yet used position 24. Only one pollutant area code for each pollutant area type may be assigned to a single monitor. (It is valid to assign one monitoring area and one status area; it is not valid to assign two monitoring areas.) To insert, place a valid pollutant area code in the next available field (24-28). A pollutant area code value is valid if it exists on the Pollutant Areas Table, and its pollutant area type is valid for the assigned value of parameter.



## **5.2 MONITOR SAMPLING PERIODS - TRANSACTION TYPE MB**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

Multiple sampling periods may be registered in the database to allow for definition of periodic monitoring. The edit restrictions prevent more than one sampling period from having a blank date sampling ended.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.2.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.2.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **5.2.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington,

D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.2.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.2.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to

ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with State code and county code in the Sites Table.

### **5.2.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

### **5.2.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a

different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

### **5.2.8 Date Sampling Began**

Description:           The date on which a distinct period of operations, i.e., collection of air quality samples, began for the monitor.

Attributes:           Date  
                          8-character date  
                          Mandatory:  
                                  Required on Insert and Update  
                                  May not be Deleted

Coding Instructions: Place a valid date string in the eighth delimited field. A date sampling began value is valid if it: is in the format of YYYYMMDD, is between January 1, 1957 and one year from the current date, does not fall within any other sample periods defined for the monitor, is greater than or equal to the date site established for the corresponding site, and is less than or equal to the date site terminated for the corresponding site, if populated.

### **5.2.9 Date Sampling Ended**

Description:           The date on which a distinct period of operations, i.e., collection of air quality samples, stopped for the monitor.

Attributes:           Date  
                          8-character date  
                          Optional

Coding Instructions: Place a valid date string in the ninth delimited field. A date sampling ended value is valid if it: is in the format of YYYYMMDD, is between January 1, 1957 and one year from the current date, is greater than or equal to the specified date sampling began, does not fall within any other sample periods defined for the monitor, is greater than or equal to the date site established for the corresponding site, and is less than or equal to the date site terminated for the corresponding site, if populated..

### **5.3 MONITOR TYPE INFORMATION - TRANSACTION TYPE MC**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The fields described below are validated for Insert (I) and Update (U) transactions.

#### **5.3.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

#### **5.3.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

#### **5.3.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.3.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.3.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing

for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

### **5.3.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

### **5.3.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions:   Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

### **5.3.8   Monitor Type**

Description:           Identification of the monitor's administrative classification.

Attributes:            Alphanumeric  
                          20-character code  
                          Mandatory:  
                                  Required on Insert  
                                  Optional on Update  
                                  May not be Deleted

Coding Instructions:   Place a valid monitor type term in the eighth delimited field. A monitor type value is valid if it exists in the Monitor Types Table.

### **5.3.9   Monitor Type Begin Date**

Description:           The designation of the date on which the monitor type assignment went into effect.

Attributes:            Date  
                          8-character date  
                          Mandatory:  
                                  Required on Insert and Update  
                                  May not be Deleted

Coding Instructions:   Place a valid date string in the ninth delimited field. A monitor type begin date value is valid if it: is in the format of YYYYMMDD, the monitor type is NAMS or SLAMS and is between January 1, 1980 and one year from the current date, the monitor type is not NAMS or SLAMS and is between January 1, 1957 and one year from the current date, does not fall within any other monitor type assignment periods defined for the monitor for the same monitor type, and falls within a sample period for the monitor.

### **5.3.10   Monitor Type End Date**

Description:           The date on which a monitor type assignment ends.



Attributes:           Date  
                      8-character date  
                      Optional

Coding Instructions: Place a valid date string in the tenth delimited field. A monitor type end date value is valid if it: is in the format of YYYYMMDD, is greater than the monitor type begin date, the monitor type is NAMS or SLAMS and is between January 1, 1980 and one year from the current date, the monitor type is not NAMS or SLAMS and is between January 1, 1957 and one year from the current date, does not fall within any other monitor type assignment periods defined for the monitor for the same monitor type, and falls within a sample period for the monitor. Multiple monitor type designations with a blank monitor type end date are valid. By definition, a NAMS is also a SLAMS, and a PAMS can also be a NAMS or SLAMS.

## **5.4 MONITOR AGENCY ROLE - TRANSACTION TYPE MD**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.4.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.4.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **5.4.3 State Code**

Description:           FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.4.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.4.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing

for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with State code and county code in the Sites Table.

#### **5.4.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.4.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions:   Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.4.8   Agency Role Name**

Description:           Classification of an agency's role in regard to the monitor.

Attributes:            Alphanumeric  
                          20 characters  
                          Mandatory

Coding Instructions:   Place a valid agency role term in the eighth delimited field. A role name value is valid if it exists in the Agency Roles Table with the role type of monitor. Multiple agency role names with the same value cannot be entered for the same period. If the agency changes for any role, the begin and end dates are used to define the applicable time period.

#### **5.4.9   Agency Code**

Description:           Identification of an agency responsible for performing a role for the monitor.

Attributes:            Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions:   To insert or update, place a valid agency code in the ninth delimited field. An agency code value is valid if it exists in combination with the state code value in the State Agencies Table.

#### **5.4.10   Begin Date**

Description:           The date on which the agency began performance of the role for the monitor. For the role of reporting, it also indicates the date that precision and accuracy data applies to the agency as reporting organization.

Attributes:            Date  
                          8-character date  
                          Mandatory

Coding Instructions: For the role of reporting, begin date is required. Place a valid date string in the tenth delimited field. A begin date value is valid if it: is in the format of YYYYMMDD, does not fall within any other agency role periods defined for the monitor for the same role name, and falls within a sample period for the monitor.

#### **5.4.11 End Date**

Description: The date on which the agency ended a period of performance of the role for the monitor. For the role of reporting, it also indicates the last date that precision and accuracy data applies to the agency as reporting organization.

Attributes: Date  
8-character date  
Mandatory

Coding Instructions: Place a valid date string in the tenth delimited field. An end date value is valid if it: is in the format of YYYYMMDD, is greater than the begin date, does not fall within any other agency role periods defined for the monitor for the same role name, and falls within a sample period for the monitor.

## **5.5 MONITORING OBJECTIVE INFORMATION - TRANSACTION TYPE ME**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.5.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.5.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.

### **5.5.3 State Code**

Description:           FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.5.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.5.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing



for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **5.5.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.5.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.5.8 Monitor Objective**

Description:           Identification of reason for measuring air quality by the monitor.

Attributes:            Alphanumeric  
                          Up to 50 characters  
                          Mandatory

Coding Instructions: Place a valid monitor objective term in the eighth delimited field. A monitor objective value is valid if it exists in the Monitor Objective Types Table. Multiple monitor objectives, applying to one or more geographical areas, may be specified.

#### **5.5.9 Urban Area Represented**

Description:           The urbanized area from which the concentrations originated (not the location of the monitor).

Attributes:            Alphanumeric  
                          4-character code  
                          Optional:  
                                  Required on Insert  
                                  Optional on Update  
                                  May not be Deleted

Coding Instructions: It is required to designate the origin of concentrations that apply to a monitor objective classification. One, and only one, of urban area represented, MSA represented, or CMSA represented may be used to indicate the designation. Place a valid urban area represented code in the ninth delimited field. An urban area represented value is valid if it exists in the Urbanized Areas Table.

#### **5.5.10 MSA Represented**

Description:           Indication of the metropolitan statistical area from which the concentrations originated, not the location of the monitor.

Attributes:           Alphanumeric  
                          4 or 8 characters  
                          Optional

Coding Instructions: It is required to designate the origin of concentrations that apply to a monitor objective classification. One, and only one, of urban area represented, MSA represented, or CMSA represented may be used to indicate the designation. Place a valid MSA represented code in the tenth delimited field. An MSA represented value is valid if it exists in the MSAs Table.

#### **5.5.11 CMSA Represented**

Description:           Indication of the consolidated metropolitan statistical area from which the concentrations originated, not the location of the monitor.

Attributes:           Alphanumeric  
                          Up to 8-character code  
                          Optional

Coding Instructions: It is required to designate the origin of concentrations that apply to a monitor objective classification. One, and only one, of urban area represented, MSA represented, or CMSA represented may be used to indicate the designation. Place a valid CMSA represented code in the eleventh delimited field. A CMSA represented value is valid if it exists in the CMSAs Table.

## **5.6 MONITORING SAMPLING SCHEDULE - TRANSACTION TYPE MF**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.6.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.6.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **5.6.3 State Code**

Description:           FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.6.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.6.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing

for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **5.6.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid Parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.6.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.6.8 RCF (Required Collected Frequency) Code**

Description:           The collection frequency required by either Photochemical Assessment Monitoring System (PAMS) regulations for organic compounds: PM-2.5 or PM-10 monitors.

Attributes:            Alphanumeric  
                          Up to 8 characters  
                          Mandatory

Coding Instructions: Place a valid RCF code in the eighth delimited field. A RCF code value is valid if it exists in the Collection Frequencies Table.

#### **5.6.9 RCF Begin Date**

Description:           The date on which the required collection frequency went into effect.

Attributes:            Date  
                          8-character date  
                          Mandatory:  
                                  Required on Insert and Update  
                                  Prohibited on Update if RCF Code blank  
                                  May not be Deleted

Coding Instructions: Place a valid date string in the ninth delimited field. An RCF begin date value is valid if it: is in the format of YYYYMMDD, is between July 1, 1987 and one year from the current date, does not fall within any other required collection frequency periods defined for the monitor, and falls within a sample period for the monitor. The RCF begin date cannot be changed via Update.

#### **5.6.10 RCF End Date**

Description:           The designation of the date on which the required collection frequency ended.

Attributes:            Date

8 characters  
Optional

**Coding Instructions:** Place a valid date string in the tenth delimited field. An RCF end date value is valid if it: is in the format of YYYYMMDD, is greater than the RCF begin date, is between July 1, 1987 and one year from the current date, does not fall within any other required collection frequency periods defined for the monitor, and falls within a sample period for the monitor.

#### **5.6.11 Number of Samples**

**Description:** Specifies the number of samples required within an indicated month for a monitor's required collection frequency when that frequency is stratified random, random, or seasonal. Twelve slots are available, one for each month in a year.

**Attributes:** Numeric  
12 digits  
Optional

**Coding Instructions:** Specification of monthly number of samples is required when RCF code is 8, 9, or S. The delimited field positions for number of samples are 11-22. Field positions correlate to month number offset by 10, i.e., field 11 is for month 1 (January), field 12 is for month 2 (February), etc. Place a valid integer in the appropriate delimited field. A value is valid if it is greater than 0 and does not exceed the number of days in the associated month.



## **5.7 MONITOR STREET DESCRIPTION - TRANSACTION TYPE MG**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The monitor's relationship to nearby streets may be described by using the MG transaction. If either tangent street number or distance from monitor is valued, the other must also be valued. Similarly, one may not be deleted without also deleting the other.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.7.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.7.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **5.7.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington,

D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.7.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.7.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to

ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with State code and county code in the Sites Table.

#### **5.7.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.7.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a

different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

### **5.7.8 Tangent Street Number**

Description:           Identification of a street number that exists for the site. Used to associate information about the relationship between specific monitors at the site and tangent roads at the site.

Attributes:            Numeric  
                          12-digit number  
                          Mandatory

Coding Instructions: Place a valid tangent street number in the eighth delimited field. A tangent street number is valid if it exists in combination with state code, county code, and site ID on the Tangent Roads Table.

### **5.7.9 Distance from Monitor**

Description:           The distance in meters between the sensing of air sampling equipment at a monitoring site and the nearest edge of the roadway.

Attributes:            Numeric  
                          10 digits, including 2 decimal places (nnnnnnnn.nn)  
                          Optional

Coding Instructions: Place a valid distance from monitor value in the ninth delimited field. A distance from monitor value is valid if it is greater than 0.

## **5.8 MONITOR OBSTRUCTION INFORMATION - TRANSACTION TYPE MH**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The type of obstruction for a monitor with restricted air flow is described by using the MH transaction. See Appendix XX for a description of the transaction formats, including those required to create monitors. For criteria pollutant monitors, transaction types MA through ME are required.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.8.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.8.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.

### **5.8.3 State Code**

- Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.
- Attributes: Alphanumeric  
2-character code  
Mandatory
- Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

### **5.8.4 County Code**

- Description: A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.
- Attributes: Alphanumeric  
3-digit code  
Mandatory
- Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

### **5.8.5 Site ID**

- Description: A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.
- A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

### **5.8.6 Parameter**

Description:           The code assigned to the parameter measured by the Monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

### **5.8.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be

stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.8.8 Type Obstruction**

Description:           The type of obstruction responsible for the restricted air flow of a monitor.

Attributes:           Alphanumeric  
                          Up to 20 characters  
                          Mandatory

Coding Instructions: Place a valid type obstruction term in the eighth delimited field. A type obstruction value is valid if it exists in the Probe Obstruction Types Table.

#### **5.8.9 Direction from Monitor**

Description:           Indication of the direction from the monitor to the obstruction itself.

Attributes:           Alphanumeric  
                          3 characters  
                          Mandatory

Coding Instructions: Place a valid direction from monitor in the ninth delimited field. A direction from monitor value is valid if it exists in the Compass Sectors Table.

#### **5.8.10 Distance to Monitor**

Description:           The closest distance, in meters, between the probe and obstruction.

Attributes:           Numeric  
                          10-digit number, including 2 decimal places (nnnnnnnn.nn)  
                          Mandatory

Coding Instructions: Place a valid distance to monitor value in the tenth delimited field. A



distance to monitor value is valid if it is greater than 0.

#### **5.8.11 Height of Obstruction**

Description: The height, in meters, of the top of the obstruction above the probe.

Attributes: Numeric  
10-digit number, including 2 decimal places (nnnnnnnnn.nn)  
Mandatory

Coding Instructions: Place a valid height of obstruction value in the eleventh delimited field. A height of obstruction value is valid if it is greater than 0.

## **5.9 MONITOR REGULATORY COMPLIANCE - TRANSACTION TYPE MI**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.9.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.9.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **5.9.3 State Code**

Description:           FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.9.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.9.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing

for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **5.9.6   PARAMETER**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.9.7   POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.9.8 Monitor Regulation Code**

Description:           Identification of an EPA regulation for which compliance documentation is required.

Attributes:            Alphanumeric  
                          8-characters  
                          Mandatory

Coding Instructions: Place a valid monitor regulation code in the eighth delimited field. A monitor regulation code value is valid if it exists in combination with parameter on the Parameter Regulations Table.

#### **5.9.9 Compliance Indicator**

Description:           The compliance status of a monitor with respect to an EPA regulation.

Attributes:            Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place a compliance indicator in the ninth delimited field. A compliance indicator value is valid for the following cases: monitor regulation code is RM or ST and compliance indicator is Y or N; monitor regulation code is SC and compliance indicator is Y, N, or W; monitor regulation code is QC and compliance indicator is Y, N, or C. Indicators: Y (in compliance with the regulation), N (not in compliance with the regulation), W (compliance has been waived), or C (in conditional compliance with the regulation).

#### **5.9.10 Compliance Date**

Description:           The date on which the current status of the monitor's compliance with the regulation was achieved.

Attributes:            Date  
                          8-character date

## Mandatory

**Coding Instructions:** Place a valid compliance date in the tenth delimited field. A compliance date value is valid if it is in the form of YYYYMMDD and compliance indicator is Y, W, or C.

## **5.10 MONITOR COLLOCATION PERIOD - TRANSACTION TYPE MJ**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.10.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.10.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **5.10.3 State Code**

Description:           FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.10.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.10.5 Site ID**

Description:           A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.



Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **5.10.6   Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.10.7   POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric

2-digit code  
Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.10.8 Collocation Begin Date**

Description: The beginning date of the time period during which a collocated monitor pair recorded precision and accuracy data. Used to determine data completeness.

Attributes: Date  
8-character date  
Mandatory

Coding Instructions: Place a valid collocation begin date in the eighth delimited field. A collocation begin date value is valid if:

- 1) it is in the format of YYYYMMDD, primary monitor indicator is Y, and the collocation begin date does not fall within any other collocation period defined for the monitor, or
- 2) primary monitor indicator is N, and collocation begin date falls within a primary monitor collocation period defined for a monitor of the same parameter at the same site.

#### **5.10.9 Collocation End Date**

Description: The ending date of the time period during which a collocated monitor pair recorded precision and accuracy data. Used to determine data completeness.

Attributes: Date  
8-character date  
Optional

Coding Instructions: Place a valid collocation end date in the ninth delimited field. A collocation end date value is valid if:

- 1) it is in the format of YYYYMMDD and either primary monitor indicator is Y and the collocation end date does not fall within any other collocation period defined for the monitor, or
- 2) primary monitor indicator is N, and the collocation end date falls within a primary monitor collocation period defined for a monitor of the same parameter at the same site.

#### **5.10.10 Distance from Primary Monitor**

Description: The distance, in meters, between a duplicate sampler and the primary sampler in a collocated pair.

Attributes: Numeric  
10-digit number, including two decimal places (nnnnnnnn.nn)  
Optional

Coding Instructions: Place a valid distance from primary monitor in the tenth delimited field.

#### **5.10.11 Primary Monitor Indicator**

Description: Indicates whether the monitor is the primary or duplicate monitor in a collocated monitor pair.

Attributes: 1-character code: Y or N  
Mandatory

Coding Instructions: Place a valid primary monitor indicator in the eleventh delimited field. A primary monitor indicator value is valid if it is Y (for primary) or N (for not primary).

## **5.11 MONITOR PROTOCOL - TRANSACTION TYPE MK**

See the transaction requirements in the Appendices for a list of transactions required to create sites and monitors. See the data input transaction formats in the Appendices for a list of required fields on each transaction format. For criteria pollutant monitors, transaction types MA through ME are required.

This transaction is needed only to specify an alternate minimum detectable limit when the Federal default is not used.

The fields described below are validated for Insert (I) and Update (U) transactions.

### **5.11.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **5.11.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **5.11.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **5.11.4 County Code**

Description:       A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **5.11.5 Site ID**

Description:       A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **5.11.6 Parameter**

Description:           The code assigned to the parameter measured by the Monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **5.11.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **5.11.8 Alternate MP ID**

Description: The sequential identification number used to distinguish combinations of sample duration, unit, method, collection frequency, composite type, and alternate minimum detectable limit (MDL) for a monitor.

Attributes: Numeric  
4-digit number  
Mandatory

Coding Instructions: Place a valid alternate MP ID in the eighth delimited field. An alternate MP ID value is valid if it is between 1 and 99 and has not been assigned to another protocol combination for the monitor.

#### **5.11.9 Sample Duration**

Description: The length of time used to acquire raw samples that are analyzed by monitors and documented in the Raw Data, Precision, or Accuracy Tables. (Formerly: interval)

Attributes: Alphanumeric  
8-character code  
Mandatory

Coding Instructions: Place a valid sample duration code in the ninth delimited field. A sample duration value is valid if it exists in the Sample Durations Table and if it exists in combination with unit, parameter, method, collection frequency, and composite type in the Protocols Table.

#### **5.11.10 Unit**

Description: Designation of the dimensional system in which a pollutant concentration or parameter reading is expressed.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid unit code in the tenth delimited field. A unit value is valid if it exists in the Units Table and if it exists in combination with sample duration, parameter, method, collection frequency, and composite type in the Protocols

Table.

#### **5.11.11 Method**

- Description: Identification of a particular method for collecting and analyzing samples of the monitor's parameter.
- Attributes: Alphanumeric  
8-character code  
Mandatory
- Coding Instructions: Place a valid Method code in the eleventh delimited field. A method value is valid if it exists in combination with parameter in the Sampling Methodologies Table, and if it exists in combination with sample duration, unit, collection frequency, and composite type in the Protocols Table.

#### **5.11.12 Collection Frequency**

- Description: Indication of the frequency according to which sample observations are to be made, specified as the amount of time that elapses between observations. Indicates how often 24-hour samples are taken, e.g., daily, every third day, stratified random, etc.
- Attributes: Alphanumeric  
Up to 8-character code  
Optional
- Coding Instructions: Place a valid collection frequency code in the twelfth delimited field. A collection frequency value is valid if it exists in the Collection Frequencies Table and if it exists in combination with parameter, method, sample duration, unit, and composite type in the Protocols Table.

#### **5.11.13 Composite Type**

- Description: The time period over which samples are composited, or the frequency of submitting composite samples.
- Attributes: Alphanumeric  
Up to 20 characters  
Optional
- Coding Instructions: Place a valid composite type term in the thirteenth delimited field. A composite type value is valid if it exists in the Composite Types Table, it exists in combination with parameter, method, sample duration, unit, and



collection frequency in the Protocols Table, and sample duration is C.

#### **5.11.14 Alternate Minimum Detectable Limit**

Description: The minimum detectable limit defined for the monitor by the reporting agency, which supercedes the EPA-defined minimum detectable limit for the designated methodology.

Attributes: Numeric  
10-digit number, including five decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place an alternate MDL value in the fourteenth delimited field. There are no edit checks to verify the validity of an alternate minimum detectable limit value.

## **5.12 MONITOR COMMENTS (Online Input Only)**

Description: Monitor comments is a free-format field that may be used in any way. It is normally used to describe special features of the monitor.

Attributes: 62-character field  
Optional

## **6.0 RAW DATA TRANSACTIONS (RC, RD)**

Transaction Types RC (Composite Raw Data) and RD (Hourly, Daily, and Sub-Hourly Raw Data) perform data manipulation on the Raw Data Table.

The three transactions in this group are used to insert, update, and delete the individual observations of parameter values in the AQS database. Most of the parameter values are the concentrations of air pollutants measured with various methods and at various time intervals. Some non-pollutant observations are also reported, such as wind speed and other meteorological values. Together, these observations of parameter values are collectively called raw data because they are the actual values reported by the monitoring sites.

Simple raw data are the sample values that have been collected by monitoring stations that can be defined for a given date and time of day. Types of simple raw data include: hourly, daily, and sub-hourly type of data.

Composite data are concentration values derived from two or more air samples obtained at different times and combined and analyzed as one sample.

In contrast to this is the summary data, which is usually calculated from the raw data by the AQS software, and is stored in the Annual Summaries Table (and a few others).

The qualifier field is used only with real observations, when an observed parameter value is present. A non-blank qualifier indicates the observed value is exceptional in some way, usually higher than normal by a substantial amount. The value of the qualifier indicates the cause of the exceptional observation (a forest fire, for example). If no specific cause can be attributed for the exceptional observation, V is coded for the qualifier (to indicate that the value is valid). A non-blank qualifier exempts the associated observation from certain quality assurance qualifiers which it would not otherwise pass. Without the exemption provided by the qualifier, neither the exceptional data nor any normal data for the same day or month would pass the quality assurance qualifiers. If the data failed to pass the qualifiers, it could not be loaded into the AQS database.

Most values do not have qualifiers, since qualifiers are only associated with rare (exceptional) events or circumstances. Furthermore, the use of qualifiers is important only for criteria pollutants. Every episode of qualifier usage (except code V) must be approved by state and EPA officials and must conform with the procedures and requirements set forth in Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events, publication number EPA-450/4-86-007, July, 1986.

Action codes are interpreted the same way for raw data transactions. Insert actions are used to enter raw data values where none previously existed. The monitor reporting the raw data values must already exist in the AQS Site Table or else there must be valid transactions in the same batch input file to create the monitor. Delete actions are used to remove one or more existing raw data values from the AQS database. Update actions are used to change existing raw data values.

Transaction type RC contains composite raw data in the following fields:

Transaction Type	Year	Qualifier-4
Action Code	Period	Qualifier-5
State Code	Number of Samples	Qualifier-6
County Code	Composite Type	Qualifier-7
Site ID	Sample Value	Qualifier-8
Parameter	Alternate MP ID	Qualifier-9
POC	Qualifier-1	Qualifier-10
Unit	Qualifier-2	Method Detectable Limit
Method	Qualifier-3	Uncertainty

Transaction type RD contains hourly, daily and sub-hourly data in the following fields:

Transaction Type	Date	Qualifier-5
Action Code	Start Time	Qualifier-6
State Code	Sample Value	Qualifier-7
County Code	Null Data Code	Qualifier-8
Site ID	Collection Frequency	Qualifier-9
Parameter	Alternate MP ID	Qualifier-10
POC	Qualifier-1	Method Detectable Limit
Sample Duration	Qualifier-2	Uncertainty
Unit	Qualifier-3	
Method	Qualifier-4	

Detailed coding instructions for the common fields and for the three raw data transactions are given in following sections.

## 6.1 COMMON FIELDS

The fields common to raw data transaction Types RC and RD are: transaction type, action code, state code, country code, site ID, (see section 3, common fields) and also parameter, POC, unit, method, sample value, alternate MP ID, qualifier-1, qualifier-2, qualifier-3, qualifier-4, qualifier-5, qualifier-6, qualifier-7, qualifier-8, qualifier-9, qualifier-10, method detectable limit, and uncertainty.

### **6.1.1 POC (Parameter Occurrence Code)**

**Description:** The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

**Attributes:** Alphanumeric  
2-character code  
Mandatory

**Coding Instructions:** Place a valid POC value in the seventh delimited field. A POC value is valid if it exists in combination with State Code, County Code, Site ID, and Parameter on the Monitors Table.

### **6.1.2 Unit**

**Description:** Designation of the dimensional system in which the pollutant concentration or parameter reading is expressed.

**Attributes:** Alphanumeric  
3-character code

Mandatory

Coding Instructions: Place a valid unit code in the eighth delimited field. A unit value is valid if it exists in the Units Table and if it exists in combination with a sample duration of C, parameter, method, and composite type in the Protocols Table.

### **6.1.3 Method**

Description: Identifies a particular method for collecting and analyzing samples of the monitor's parameter.

Attributes: Alphanumeric  
8-character code  
Mandatory

Coding Instructions: Place a valid method code in the ninth delimited field. A method value is valid if it exists in combination with parameter in the Sampling Methodologies Table, and if it exists in combination with the duration code of C, unit, and composite type in the Protocols Table.

## **6.2 COMPOSITE RAW DATA - TRANSACTION TYPE RC**

See the data input transaction formats in the Appendices for a list of required fields on each transaction format. Transaction type RC is used for composite observations. Type RC transactions Insert, Update, and Delete raw data values in the Raw Data Table of the AQS database.

An Insert transaction is used to insert a new observation into the database where none already exists. An Update transaction is used to change or delete an existing observation in the database. A Delete transaction is used to delete an observation and its associated fields from the database.

### **6.2.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **6.2.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

### **6.2.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **6.2.4 County Code**

Description:       A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **6.2.5 Site ID**

Description:       A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.



Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **6.2.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **6.2.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **6.2.8 Unit**

Description: Designation of the dimensional system in which the pollutant concentration or parameter reading is expressed.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid unit code in the eighth delimited field. A unit value is valid if it exists in the Units Table and if it exists in combination with a sample duration of C, parameter, method, and composite type in the Protocols Table.

#### **6.2.9 Method**

Description: Identifies a particular method for collecting and analyzing samples of the monitor's parameter.

Attributes: Alphanumeric  
8-character code  
Mandatory

Coding Instructions: Place a valid method code in the ninth delimited field. A method value is valid if it exists in combination with parameter in the Sampling Methodologies Table, and if it exists in combination with the duration code of C, unit, and composite type in the Protocols Table.

#### **6.2.10 Year**

Description: Designation of the calendar year for which the observation was reported.

Attributes: Alphanumeric  
4-digit number  
Mandatory

Coding Instructions: Place a valid year in the tenth delimited field. A year value is valid if it is in the form of YYYY, it is between 1957 and the current year, and there is valid sample period defined for the monitor in that year.

### **6.2.11 Period**

Description: Indicates the time period within the year to which the observation applies. It is expressed in units that may be inferred from composite type.

Attributes: Alphanumeric  
2-digit number  
Mandatory

Coding Instructions: Place a valid period number in the eleventh delimited field. A period value is valid if it falls within the minimum and maximum period defined for composite type in the Composite Types Table.

Valid period codes depend on composite type as follows:

Comp Type	Valid Period Code
1 (Quarterly)	01-04
2 (Seasonal)	01-04
3 (Monthly)	01-12
4 (Weekly)	01-53
5 (Annually)	01

### **6.2.12 Number of Samples**

Description: Indicates the number of samples that were combined to yield the composite sample value.

Attributes: Alphanumeric  
10-digit number  
Mandatory

Coding Instructions: Place a valid number of samples in the twelfth delimited field. A number of samples value is valid if it is greater than 0 and is less than the maximum number of samples defined for composite type in the Composite Types Table.

### **6.2.13 Composite Type**

Description: Indicates the time period over which samples are composited or the frequency of submitting composite samples.

Attributes: Alphanumeric

10 characters  
Optional

**Coding Instructions:** Place a valid composite type term in the thirteenth delimited field. A composite type value is valid if it exists in the Composite Types Table, it exists in combination with parameter, method, sample duration equal to C, and unit in the Protocols Table.

#### **6.2.14 Sample Value**

**Description:** The value of a composite observation.

**Attributes:** Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Mandatory

**Coding Instructions:** Place the sample value in the thirteenth delimited field. Reported scale is implied from the number of digits allocated to the right of the decimal point. For example, to submit the value of 1.2 in the scale of 3, then submit the value as 1.200.

For some parameters, upper and lower limits have been established for observations. The sample value is compared to these limits, if they exist on the Parameters Table for the pollutant. If the sample value falls outside the range defined by the absolute max sample value and the absolute min sample value, and there is no qualifier entered with the sample value, then the sample value will be rejected with an error message.

Lead (12128) is the only parameter that is reported as a composite observation (duration code = C), and that has an absolute maximum sample value defined on the Parameters Table. The relevant maximum values for lead composite observations are listed below:

<b>Parameter</b>	<b>Code</b>	<b>Units</b>	<b>Abs Max Sample Value</b>	<b>Abs Min Sample Value</b>	<b>Fed Rel Max Sample Value</b>	<b>Fed Rel Min Sample Value</b>
Lead	12128	µg/m <sup>3</sup> (25 C)	200	0	100	0

If the sample falls outside the range defined by the Federal relative maximum sample value and Federal relative minimum sample value, and there is no qualifier entered with the sample value, then the sample will not be rejected, but will be highlighted in the Statistical Critical Review Report with a warning message.

### **6.2.15 Alternate MP ID**

- Description: The sequential identification number used to distinguish combinations of sample duration, unit, method, collection frequency, composite type, and alternate MDL for a monitor.
- Attributes: Numeric  
4-digit number  
Optional
- Coding Instructions: Place a valid alternate MP ID number in the fifteenth delimited field. An alternate MP ID value is valid if it exists in the monitor Protocols Table for the monitor. (Note: it is only necessary to provide this value if an alternate MDL applies to the sample value; otherwise, the appropriate monitor protocols can be derived.) If an MP ID does not exist for the combination of codes, but the combination exists on the Protocols Table, a new MP ID will be assigned.

### **6.2.16 Qualifier 1-10**

- Description: Identification of qualifications used to describe the composite raw data. They may document exceptional data, or quality assurance exceptions.
- Attributes: Alphanumeric  
8-character code  
Optional
- Coding Instructions: Ten fields (delimited fields 16-25), are allocated for the designation of composite data qualifiers. It is valid to designate one, and only one, exceptional data qualifier, and as many quality assurance qualifiers as are necessary. To designate qualifiers, use the available fields in sequence: place the first qualification in field 16, the second in field 17, and so on. A particular qualifier value is valid if it exists in the Qualifiers Table.

### **6.2.17 Method Detectable Limit**

- Description: The minimum detectable level defined for the monitor and method.
- Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)
- Coding Instructions: A user can report MDL on the raw data transaction, or leave it blank. If it is reported on the raw data transactions, then the software looks to see whether it is a new MDL value (i.e., does not exist on the Monitor Protocol Table).

If it is a new value, a new monitor protocol record is system-generated and that new MP ID is stored with the raw data value.

If the reported MDL value is not a new value, and there is already a monitor protocol record for that method and MDL, then the existing Alternate MP ID from the Monitor Protocol Table is stored with the raw data value.

Another way of reporting a new MDL is to create a new monitor protocol with the new value using the MK transaction. Then the raw data transactions can reference the new monitor protocol record being created in the batch stream, and the MDL value is not needed, since it is already on the protocol record. To do this, the alternate MP ID on the MK record being created would be the same value contained in the alternate MP ID field on the RC or RC transactions.

### **6.2.18 Uncertainty**

Description:

Attributes:            Numeric  
                         10-digit number, including 5 decimal places (nnnnn.nnnnn)

Coding Instructions:

### **6.3 HOURLY, DAILY, AND SUB-HOURLY RAW DATA - TRANSACTION TYPE RD**

The type RD transaction is used for parameter observations with sampling intervals less than or equal to 24 hours. See the data input transaction formats in the Appendices for a list of required fields on each transaction format.

An Insert transaction is used to insert observations or qualifiers into the database where neither currently exists. An Update transaction is used to change or delete existing observations or missing value reason codes. A Delete transaction is used to remove all the existing observations and missing value reason codes within the temporal scope of the transaction.

#### **6.3.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

#### **6.3.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.  
U - Change one or more column values for an existing row in one or more tables.  
D - Delete a row from a table(s) for the row containing the key data.

#### **6.3.3 State Code**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes: Alphanumeric

2-character code  
Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

#### **6.3.4 County Code**

Description: A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes: Alphanumeric  
3-digit code  
Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

#### **6.3.5 Site ID**

Description: A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.



Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

### **6.3.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

### **6.3.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric  
                          2-digit code  
                          Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

### **6.3.8 Sample Duration**

Description: Identification of the length of time used to collect the raw sample value.

Attributes: Alphanumeric  
8-digit number  
Mandatory

Coding Instructions: Place a valid sample duration code in the eighth delimited field. A sample duration value is valid if it exists in the Sample Durations Table and if it exists in combination with unit, parameter, method, and collection frequency in the Protocols Table.

### **6.3.9 Unit**

Description: Designation of the dimensional system in which the pollutant concentration or parameter reading is expressed.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid unit code in the ninth delimited field. A unit value is valid if it exists in the Units Table and if it exists in combination with a sample duration of C, parameter, method, and composite type in the Protocols Table. The unit code must also exist in the Units Conversion Table, along with the conversion factor to convert to standard units for the parameter.

### **6.3.10 Method**

Description: Identifies a particular method for collecting and analyzing samples of the monitor's parameter.

Attributes: Alphanumeric  
8-character code  
Mandatory

Coding Instructions: Place a valid method code in the tenth delimited field. A method value is valid if it exists in combination with parameter in the Sampling Methodologies Table, and if it exists in combination with the duration code of C, unit, and composite type in the Protocols Table.

### **6.3.11 Date**

Description:	Designation of the calendar date for which the observation is being reported.
Attributes:	Alphanumeric 8-digit number Mandatory
Coding Instructions:	Place a valid date in the eleventh delimited field. A date value is valid if it is in the form of YYYYMMDD, it is between 1957 and the current year, and it falls within a valid sample period defined for the monitor.

### **6.3.12 Start Time**

Description:	Indicates the beginning of the sampling period in standard time at the location of the monitoring site.
Attributes:	Alphanumeric 5 characters Mandatory
Coding Instructions:	Place a valid start time in the twelfth delimited field. A start time value is valid if it is in the format of HH:MM, and does not overlap another sampling period for the monitor.

### **6.3.13 Sample Value**

Description:	The value of an observation being reported.
Attributes:	Numeric 10-digit number, including 5 decimal places (nnnnn.nnnnn) Optional
Coding Instructions:	Place the sample value in the thirteenth delimited field. Reported scale is implied from the number of digits allocated to the right of the decimal point. For example, to submit the value of 1.2 in the scale of 3, then submit the value as 1.200.

For some parameters, upper and lower limits have been established for observations. The sample value is compared to these limits, if they exist on the Parameters Table for the pollutant. If the sample value falls outside the range defined by the absolute max sample value and the absolute min sample value, and there is no qualifier entered with the sample value, then the sample

value will be rejected with an error message.

If the sample falls outside the range defined by the Federal relative maximum sample value and Federal relative minimum sample value, and there is not qualifier entered with the sample value, then the sample will not be rejected, but will be highlighted in the Statistical Critical Review Report with a warning message.

The relevant maximum values and parameters are listed below:

Parameter Code	Parameter Description	Abs Max Sample Value	Abs Min Sample Value	Fed Rel Max Sample Value	Fed Rel Min Sample Value	Unit
11101	Suspended Particulate (TSP)	10000	0	1000	0	µg/cubic meter (25 c)
12128	Lead (TSP)	200	0	100	0	µg/cubic meter (25 c)
42101	Carbon Monoxide	150	0	75	0	ppm
42401	Sulfur Dioxide	5	0	1	0	ppm
42601	Nitric Oxide	5	0	1	0	ppm
42602	Nitrogen Dioxide	3	0	1	0	ppm
42603	Oxides of Nitrogen	5	0	1.5	0	ppm
43101	Total Hydrocarbons	99999	0	10000	0	parts per billion carbon
43102	Total NMOC	20000	0	10000	0	parts per billion carbon
43201	Methane	99999	0			parts per billion carbon
44201	Ozone	0.7	0	0.4	0	pm
61102	Wind Direction	360	0	360	0	degrees, compass
61104	Resultant Direction	360	0	360	0	degrees, compass
61106	Std Dev Hz Wind Dir	360	0	360	0	degrees, compass
61107	Std Dev Vt Wind Dir	360	0	360	0	degrees, compass

Parameter Code	Parameter Description	Abs Max Sample Value	Abs Min Sample Value	Fed Rel Max Sample Value	Fed Rel Min Sample Value	Unit
61112	Vert Wind Direction	360	0	360	0	degrees, compass
62101	Outdoor Temperature	150	-60			degrees, Fahrenheit
62102	Virtual Temperature	150	-60			degrees, Fahrenheit
62104	Temperature 24-Hour Max	150	-60			degrees, Fahrenheit
62105	Temperature 24-Hour Min	150	-60			degrees, Fahrenheit
62107	Indoor Temperature	150	-60			degrees, Fahrenheit
62201	Relative Humidity	100	0			percent rel humidity
68101	Sample Flow Rate - CV	20	0	20	0	percent
68102	Sample Volume	25.2	8			cubic meter
68103	Ambient Min Temperature	55	-40	55	-40	degrees, centigrade
68104	Ambient Max Temperature	55	-40	55	-40	degrees, centigrade
68105	Ambient Avg Temperature	55	-40	55	-40	degrees, centigrade
68106	Sample Min Barometric Pressure	850	450	850	450	millimeters (mercury)
68107	Sample Max Barometric Pressure	850	450	850	450	millimeters (mercury)
68108	Sample Avg Barometric Pressure	850	450	850	450	millimeters (mercury)
68109	Elapsed Sample Time	1500	480			minutes
81102	PM-10 Total 0-10 Um	5000	-10	500	-10	µg/cubic meter (25 c)
88101	PM-2.5 Local Conditions	5000	-10	500	-10	µg/cubic meter (LC)

#### **6.3.14 Null Data Code**

Description: Code to explain why no sample value was reported.

Attributes: Alphanumeric  
8-character code  
Optional

Coding Instructions: Place a valid null value code in the fourteenth delimited field. A null data code value is valid if it exists in the Qualifiers Table with the qualifier type of null.

#### **6.3.15 Collection Frequency**

Description: Indicates the elapsed time period between observations.

Attributes: Alphanumeric  
8-character code  
Optional

Coding Instructions: Place a valid collection frequency code in the fifteenth delimited field. A collection frequency is required only for PM-10 and PM-2.5. For hourly data, leave collection frequency blank. A collection frequency value is valid if it exists in the Collection Frequencies Table, and if it exists in combination with parameter, method, sample duration, and unit in the Protocols Table.

#### **6.3.16 Alternate MP ID**

Description: The sequential identification number used to distinguish combinations of sample duration, unit, method, collection frequency, composite type, and alternate MDL for a monitor.

Attributes: Numeric  
4-digit number  
Optional

Coding Instructions: Place a valid alternate MP ID number in the sixteenth delimited field. An alternate MP ID value is valid if the MP ID Value exists in the monitor Protocols Table for the monitor. (Note: it is only necessary to provide this value if an alternate MDL applies to the sample value; otherwise, the appropriate monitor protocols can be derived.)

### **6.3.17 Qualifier 1-10**

Description:	Identification of qualifications used to describe the composite raw data. They may document exceptional data, or quality assurance exceptions.
Attributes:	Alphanumeric 8-character code Optional
Coding Instructions:	Ten fields (delimited fields 16-25), are allocated for the designation of raw data qualifiers. It is valid to designate one, and only one, exceptional data qualifier, and as many quality assurance qualifiers as are necessary. To designate qualifiers, use the available fields in sequence: place the first qualification in field 16, the second in field 17, and so on. A particular qualifier value is valid if it exists in the Qualifiers Table.

## 6.4 STATISTICAL TESTS

The pattern and gap tests performed on hourly data (duration of 1) are described briefly below. See the EPA document Screening Procedures for Ambient Air Quality for more detailed information (publication # EPA-450/2-78-037, July 1978). The values are validated via the following statistical tests, and results are included in the Statistical Critical Review Report for user review prior to posting as production data.

### **6.4.1 Pattern Tests**

Pattern tests are performed on hourly data for pollutants 44201 (O<sub>3</sub>), 42101 (CO), 42401 (SO<sub>2</sub>), and 42602 (NO<sub>2</sub>). Exceptional event data are excluded from the tests. The tests are run on a month of hourly data. Essentially, each test scans the month's values and compares them against empirically derived thresholds to determine if they are questionable. If so, the value is flagged as failing that particular test. The raw data values are converted to the appropriate units before the tests are applied. The factors used to convert from reporting units to the units of the tests are given in Table 6-1. The threshold values for each pollutant and each test are listed in Table 6-2. As that Table shows, different threshold values pertain depending on the season of the year and the time of day.

The Dixon test (not applied to CO) scans each day's values and determines the highest, second highest, and lowest values in that day. It then computes the Dixon ratio, defined as  $(\text{max} - \text{secmax}) / (\text{max} - \text{low})$ . If this value is greater than 0.55, the day fails the Dixon test and all hours are marked as failing.

The max hour test compares each value in the month to a constant to determine if the value is too high. If so, it is marked as failing.

The high difference test compares the value at each hour in the month to the previous hour and the subsequent hour. If the difference between any two hours is greater than allowable, then the hour under inspection is marked as failing.

The spike test works much like the high difference test, except that both differences must be greater than allowable for the test to fail. Also, the percentage difference between the hour in question and both its adjacent hours must be greater than allowable for the test to fail. If either the difference or the percentage comparison fails, the value is rejected.

The high consecutive values test looks at each hour and the subsequent three hours. If all four values are greater than allowable, then all four hours are marked as failing the test.



**Table 6-1 Conversion Factors for the Pattern and Gap Tests**

<b>Pollutant</b>	<b>Units for Gap and Pattern Tests</b>	<b>Reported Units</b>	<b>Conversion Factors</b>
42101 (CO)	ppm	005 (mg/m <sup>3</sup> 25°) 006 (mg/m <sup>3</sup> 0°) 007 (ppm) 008 (ppb)	0.86957 0.79653 1.0 0.001
42401 (SO <sub>2</sub> )	pphm*	001 (ug/m <sup>3</sup> 25°) 002 (ug/m <sup>3</sup> 0°) 007 (ppm) 008 (ppb)	0.03817 0.03496 100.0 0.1
42602 (NO <sub>2</sub> )	pphm*	001 (ug/m <sup>3</sup> 25°) 002 (ug/m <sup>3</sup> 0°) 007 (ppm) 008 (ppb)	0.05319 0.04872 100.0 0.1
44201 (O <sub>3</sub> )	pphm*	001 (ug/m <sup>3</sup> 25°) 002 (ug/m <sup>3</sup> 0°) 007 (ppm) 008 (ppb)	0.05102 0.04673 100.0 0.1

\*pphm - parts per hundred million

**Table 6-2 Threshold Values for the Pattern Tests**

<b>Pollutant</b>	<b>Data Minimum Stratification</b>	<b>Maximum Hour Test</b>	<b>High Difference Test</b>	<b>Spike</b>	<b>Consecutive Values Test</b>	<b>Value*</b>
Ozone (pphm)	Summer-Day Months: 05-10 Hours: 10-17	50	15	10 (300%)	26	5
	Summer-Night Months: 05-10 Hours: 18-09	38	10	5 (300%)	26	5
	Winter-Day Months: 11-04 Hours: 10-17	26	13	10 (300%)	26	5
	Winter-Night Months: 11-04 Hours: 18-09	15	10	5 (300%)	26	5
Carbon Monoxide (ppm)	Rush Traffic Hours: 06-10 06-20	65	22	17 (500%)	35	17
	Non-Rush Traffic Hours: 11-15 21-05	44	22	17 (500%)	35	17
Sulfur Dioxide (pphm)	Zone 1 Regions 1, 5, 6, 7	99	19	8 (500%)	38	25
	Zone 2 Regions 2, 3, 4	50	11	8 (500%)	38	25
	Zone 3 Regions 8, 9, 10	30	8	8 (500%)	38	25
Nitrogen Dioxide (pphm)	None	64	27	11 (300%)	53	12

\*Values below the minimum are excluded from the high difference and spike tests.

### **6.4.2 Gap Test**

The gap test is performed on data for pollutants 44201 (O<sub>3</sub>), 42101 (CO), 42401 (SO<sub>2</sub>), and 42602 (NO<sub>2</sub>). Exceptional events data are excluded. The gap test is so named because it looks for gaps in the Frequency Distribution Table for a month's values. The test is run on a month of hourly data (duration of 1). For each pollutant, the program builds a Frequency Distribution Table and computes constants associated with the frequency distribution. If there is not enough data to compute the constants, a warning is issued. Having determined the constants, a largest reasonable gap is estimated. Then the largest actual gap in the data is determined and compared to the largest estimated gap to determine whether the month passes or fails the gap test.

### **6.4.3 Patterns and Gap Failure Report**

The patterns and gap failure report is produced by the CR stats program. The report identifies the day in which a pattern test failed or the month in which the gap test failed, and it shows the first and last keys of the transactions involved in the failed test. Under the heading hourly values failing test(s)/test(s) failed, the report gives additional information to help identify the values that failed the test.

For pattern test failures, the report shows all the values for each day in which a value failed a test. If database values are being changed with Update transactions, some of the values listed may be from the database and some from the transactions in the batch transaction file. One-letter codes under the values indicate which of the pattern tests a value failed. If a particular value failed more than one test, multiple codes are listed. The codes are:

C	High consecutive values test
D	Dixon test
H	High difference test
M	Max hour test
S	Spike test

The codes are also listed on each page of the reports as part of the page heading.

Determining which values are involved in a failure of the gap test is a bit more difficult. The gap test identifies a gap in the frequency distribution of a month's values. Often, but not always, the gap is due to an outlier, a value unusually higher or lower than the bulk of the data for the month. The patterns and gap failure report does not identify the date and hour of the value(s) failing the gap test, but it does give information that may allow manual identification of the values(s). Gap size is the difference in magnitude between the two values on either side of the gap in the frequency distribution, expressed in the units used for the gap test (ppm or pphm). Num above gap is the number of values above the gap. If the number of values is large, the gap is in the smallest values for the month. Finally, slot below gap is the value on the low end of the gap, expressed in the units of the test (ppm or pphm).

#### **6.4.4 Shewhart Test**

The Shewhart test which is performed on daily data is described briefly herein. See the EPA Document Screening Procedures for Ambient Air Quality for more detailed information (publication # EPA-450/2-78-037, July 1987).

The Shewhart test is performed on daily data (duration is 7, 24-hour) for pollutants 12128 (Pb), 42401 (SO<sub>2</sub>), 42602 (NO<sub>2</sub>), 88101 (PM-2.5), and 81102 (PM-10). Exceptional events data are excluded. The test is run on a month of daily data. The program counts the number of valid samples for the current month and each of the three previous months. If there is insufficient data to perform the test, a warning message is issued. Given sufficient data for at least two of the three previous months, the program computes the mean and range for the current month. It then computes the historical mean and range, from the mean and range of the data for the three historical months. The mean and range for the current month are compared against the historical values to determine whether the current month passes or fails the Shewhart test.

## **7.0 ACCURACY/PRECISION TRANSACTIONS (RA, RP)**

The two transactions in this group are used to insert, update, and delete the individual observations of parameter values in the AQS database, for accuracy and precision data. The parameter values are the known and observed concentrations of air pollutants measured with the various methods and at various time intervals. These observations of parameter values are collectively called raw accuracy/precision data because they are the actual, unprocessed values reported by the monitoring sites. This is contrasted with the summaries of the observations derived by AQS software.

In the accuracy/precision Raw Data Tables, there are two sets of fields for each possible observation: actual value, which is the known concentration of a parameter, and indicated value, which is the observed concentration of a parameter as measured by the monitor.

Action codes are interpreted the same way for both types of accuracy/precision raw data transactions: Insert actions are used to enter accuracy/precision raw data values where none previously existed. The monitor reporting the accuracy/precision raw data values must already exist in the database. Delete actions are used to remove one or more existing accuracy/precision raw data values from the AQS database. Update actions are used to change existing accuracy/precision raw data values.

The two types of accuracy/precision raw data transactions have several fields in common: transaction type, action code, state code, country code, site ID, parameter, POC, and unit.

Transaction type RA contains accuracy data in the following fields:

Transaction Type	Year Represented	Level 1 Indicated Value
Action Code	Quarter Represented	Level 2 Actual Value
State Code	Date	Level 2 Indicated Value
County Code	Type Audit	Level 3 Actual Value
Site ID	Local Primary Standard	Level 3 Indicated Value
Parameter	Audit Class	Level 4 Actual Value
POC	Accuracy Type	Level 4 Indicated Value
Accuracy Audit ID Number	Audit Sample ID	Other Level Actual Value
Sample Duration	Expiration Date	Other Level Indicated Value
Unit	Audit Scheduled	Zero Span
Method	Level 1 Actual Value	

Transaction type RP contains precision data in the following fields:

Transaction Type	POC	Actual Value
Action Code	Precision ID	Indicated Method
State Code	Sample Duration	Indicated Value
County Code	Unit	Collocated POC ID
Site ID	Actual Method	Precision Sample ID
Parameter	Date	Agency Performing Audit

Detailed coding instructions for the common fields and for the two accuracy/precision transactions are given below.

## **7.1 ACCURACY DATA - TRANSACTION TYPE RA**

The type RA transaction is used for parameter observations at various intervals to Insert, Update, or Delete accuracy raw data values.

For intermittent monitors, the actual value is the known value from the audit device. The indicated value is the observation recorded by the sampler.

For continuous monitors, the actual value is the known concentration of the gas mixture used to challenge the monitor. The indicated value is the observed concentration of gas indicated when the monitor was challenged with a known concentration of gas mixture. For continuous PM monitors, the actual value is the known value for the audit device, and the indicated value is the value observed by the sampler.

An Insert transaction is used to insert observations into the database. An Update transaction is used to change existing observations. A Delete transaction is used to remove existing observations.

### **7.1.1 Transaction Type**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **7.1.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes: Alphanumeric  
1-character code  
Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.

### **7.1.3 State Code**

Description:	FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.
Attributes:	Alphanumeric 2-character code Mandatory
Coding Instructions:	Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

### **7.1.4 County Code**

Description:	A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.
Attributes:	Alphanumeric 3-digit code Mandatory
Coding Instructions:	Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

### **7.1.5 Site ID**

Description:	<p>A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.</p> <p>A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.</p> <p>If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to</p>
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ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

#### **7.1.6 Parameter**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

#### **7.1.7 POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:           Numeric



2-digit code  
Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

#### **7.1.8 Accuracy Audit ID Number**

Description: A sequentially assigned number used to identify a unique measurement data group for a monitor on a specific date.

Attributes: Numeric  
2-digit code  
Mandatory

Coding Instructions: Place a valid accuracy audit ID number in the eighth delimited field. An accuracy audit ID number value is valid if it is greater than 0.

#### **7.1.9 Sample Duration**

Description: Identification of the length of time used to collect the raw sample value.

Attributes: Alphanumeric  
8-digit number  
Mandatory

Coding Instructions: Place a valid sample duration code in the ninth delimited field. A sample duration value is valid if it exists in the Sample Durations Table and if it exists in combination with unit, parameter, method, and collection frequency in the Protocols Table.

#### **7.1.10 Unit**

Description: Designation of the dimensional system in which the pollutant concentration or parameter reading is expressed.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid unit code in the tenth delimited field. A unit value is valid if it exists in the Units Table and if it exists in combination with a sample duration of C, parameter, method, and composite type in the Protocols Table.

#### **7.1.11 Method**

Description:	Identifies a particular method for collecting and analyzing samples of the monitor's parameter.
Attributes:	Alphanumeric 8-character code Mandatory
Coding Instructions:	Place a valid method code in the eleventh delimited field. A method value is valid if it exists in combination with parameter in the Sampling Methodologies Table, and if it exists in combination with the duration code of C, unit, and composite type in the Protocols Table.

#### **7.1.12 Year Represented**

Description:	Indication of the year represented by the audit.
Attributes:	Numeric 4 digits Optional
Coding Instructions:	Place a valid year represented number in the twelfth delimited field. A year represented value is valid if it is in the format of YYYY and is less than or equal to accuracy date's year. The year represented is required only for lead analytical audits performed in the laboratory, to link the year to the concentration samples analyzed during the audits.

#### **7.1.13 Quarter Represented**

Description:	Indication of the quarter represented by the audit.
Attributes:	Numeric 1-digit code Optional
Coding Instructions:	Place a valid quarter represented number in the thirteenth delimited field. A quarter represented value is valid if it is between 1 and 4, and is less than or equal to the quarter of the analysis or any quarter for the previous year. The quarter represented is required only for lead analytical audits performed in the laboratory, to link the quarter to the concentration samples analyzed during the audits.

#### **7.1.14 Date**

Description: Designation of the calendar date for which the accuracy audit is being reported.

Attributes: Alphanumeric  
8 characters  
Mandatory

Coding Instructions: Place a valid date in the fourteenth delimited field. A date value is valid if:  
It is in the form of YYYYMMDD,  
It is between January 1, 1980 and the current date,  
It falls within a valid sample period defined for the monitor, and,  
If a criteria pollutant monitor is being audited, it falls within a valid reporting organization period.

#### **7.1.15 Type Audit**

Description: Description of who performed the audit and how the audit standard was certified.

Attributes: Alphanumeric  
20 characters  
Mandatory

Coding Instructions: Place a valid type audit term in the fifteenth delimited field. A type audit value is valid if it exists in the Audit Types Table.

#### **7.1.16 Local Primary Standard**

Description: Identification of the source of the local primary standards used for the audit.

Attributes: Alphanumeric  
30 characters  
Mandatory

Coding Instructions: Place a valid local primary standard term in the sixteenth delimited field. A local primary standard term is valid if it exists in the Local Primary Standards Table.

#### **7.1.17 Audit Class**

Description: Description of the class of audit taken at the monitor.

Attributes: Alphanumeric

20 characters

Mandatory

**Coding Instructions:** Place a valid audit class term in the seventeenth delimited field. An audit class term is valid if it exists in the Audit Classes Table, and, if there is an entry in the protocol Audit Classes Table for the parameter, sample duration, and unit combination, it matches the prescribed audit class term for that combination.

Values are A (Analytical), F (Flow), and S (Span).

Audit classification is specific to the parameter-interval-units combination indicated in the following table:

Parameter	Interval	Units	Audit Class
12128	7, 8, C	077	A

#### **7.1.18 Accuracy Type**

**Description:** A description of the type of accuracy test performed.

**Attributes:** Alphanumeric  
20 characters  
Mandatory

**Coding Instructions:** Place a valid accuracy type term in the eighteenth delimited field. An accuracy type term is valid if it exists in the Accuracy Types Table.

#### **7.1.19 Audit Sample ID**

**Description:** The unique ID number of reference sample used to challenge the instrument.

**Attributes:** Alphanumeric  
10 characters  
Optional

**Coding Instructions:** Place the audit sample ID alphanumeric text in the nineteenth delimited field. No edit checks are performed on an audit sample ID value.

#### **7.1.20 Expiration Date**

**Description:** The expiration date for the local primary standard.

**Attributes:** Alphanumeric

8 characters  
Optional

Coding Instructions: Place a valid expiration date in the twentieth delimited field. An expiration date value is valid if it is in the format of YYYYMMDD.

#### **7.1.21 Audit Scheduled**

Description: The initial date that performance audit was scheduled.

Attributes: Alphanumeric  
8 characters  
Optional

Coding Instructions: Place a valid audit scheduled date in the twenty-first delimited field. An audit scheduled value is valid if it is in the format of YYYYMMDD.

#### **7.1.22 Level 1-4 Actual Value**

Description: The true observation of the parameter value at the prescribed audit level.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: The accuracy data transaction format allows for the specification of actual values for four levels. The levels are position-dependent and coordinate with the audit levels defined for the parameter and the method's recording mode (continuous or intermittent) in the Audit Levels Table. Each actual value must be submitted with a corresponding indicated value for the same level. The level 1 actual value is assigned to the twenty-second delimited field; level 2, to the twenty-fourth; level 3 to the twenty-sixth; level 4, to the twenty-eighth. Place the true values of parameter concentrations being used to challenge the monitor according to the defined levels in the appropriate field. An actual value is valid if it falls within the corresponding range of values defined for the parameter and recording mode in the Audit Levels Table. If no range is defined for the level, than the value is considered to be valid, but is not included in data completeness determinations.

For some parameters, a range of expected values has been established for observations. Concentrations reported outside the range may be data for another audit level. The relevant ranges and parameters are listed below. Ranges are specified in 40 CFR Part 58 Appendix A. The ranges included in AQS, however, have been expanded to allow data entry.

Parameter Code	Parameter Description	Level Number	Range
12128	Lead (TSP)	1	0.5 - 2.5 µg/cubicmeter (25 c)
12128	Lead (TSP)	2	2 - 5 µg/cubicmeter (25 c)
42101	Carbon Monoxide	1	2.7 - 10.5 ppm
42101	Carbon Monoxide	2	13.5 - 22 ppm
42101	Carbon Monoxide	3	21.1 - 49.5 ppm
42101	Carbon Monoxide	4	72 - 99 ppm
42401	Sulfur Dioxide	1	0.027 - 0.095 ppm
42401	Sulfur Dioxide	2	0.135 - 0.31 ppm
42401	Sulfur Dioxide	3	0.221 - 0.495 ppm
42401	Sulfur Dioxide	4	0.72 - 0.99 ppm
42601	Nitric Oxide	1	0.027 - 0.088 ppm
42601	Nitric Oxide	2	0.135 - 0.22 ppm
42601	Nitric Oxide	3	0.221 - 0.495 ppm
42601	Nitric Oxide	4	0.72 - 0.99 ppm
42602	Nitrogen Dioxide	1	0.027 - 0.088 ppm
42602	Nitrogen Dioxide	2	0.135 - 0.22 ppm
42602	Nitrogen Dioxide	3	0.221 - 0.51 ppm
42602	Nitrogen Dioxide	4	0.72 - 0.99 ppm
44201	Ozone	1	0.027 - 0.09 ppm
44201	Ozone	2	0.135 - 0.26 ppm
44201	Ozone	3	0.22 - 0.495 ppm
44201	Ozone	4	0.72 - 0.99 ppm

For some parameters, percent differences are utilized to reject data that could be in error as a result of transcription errors. The maximum percent differences and parameters are listed below:

Parameter Code	Maximum Percent Difference
44201	± 90 %
42602	± 90 %
42401	± 90 %
42101	± 90 %
12128	± 90 %

The percent difference is calculated using the following formula:

$$\left\{ \frac{(\text{indicated} - \text{actual})}{\text{actual}} \right\} \times 100$$

### **7.1.23 Level 1-4 Indicated Value**

**Description:** The recorded observation of the parameter value at the prescribed audit level.

**Attributes:** Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

**Coding Instructions:** The accuracy data transaction format allows for the specification of indicated values for four levels. The levels are position-dependent and coordinate with the audit levels defined for the parameter and the method's recording mode (continuous or intermittent) in the Audit Levels Table. Each indicated value must be submitted with a corresponding actual value for the same level. The level 1 indicated value is assigned to the twenty-third delimited field; level 2, to the twenty-fifth; level 3 to the twenty-seventh; level 4, to the twenty-ninth. Place the recorded values of parameter concentrations that were used to challenge the monitor according to the defined levels in the appropriate field. An indicated value is valid if its percentage difference relative to the actual value does not exceed the level defined for the parameter on the Parameters Table.

For some parameters, a range of expected values has been established for observations. Concentrations reported outside the range may be data for another audit level. The relevant ranges and parameters are listed below. Ranges are specified in 40 CFR Part 58 Appendix A. The ranges included in AQS, however, have been expanded to allow data entry.

<b>Parameter Code</b>	<b>Parameter Description</b>	<b>Level Number</b>	<b>Range</b>
12128	Lead (TSP)	1	0.5 - 2.5 µg/cubicmeter (25 c)
12128	Lead (TSP)	2	2 - 5 µg/cubicmeter (25 c)
42101	Carbon Monoxide	1	2.7 - 10.5 ppm
42101	Carbon Monoxide	2	13.5 - 22 ppm
42101	Carbon Monoxide	3	21.1 - 49.5 ppm
42101	Carbon Monoxide	4	72 - 99 ppm
42401	Sulfur Dioxide	1	0.027 - 0.095 ppm
42401	Sulfur Dioxide	2	0.135 - 0.31 ppm

Parameter Code	Parameter Description	Level Number	Range
42401	Sulfur Dioxide	3	0.221 - 0.495 ppm
42401	Sulfur Dioxide	4	0.72 - 0.99 ppm
42601	Nitric Oxide	1	0.027 - 0.088 ppm
42601	Nitric Oxide	2	0.135 - 0.22 ppm
42601	Nitric Oxide	3	0.221 - 0.495 ppm
42601	Nitric Oxide	4	0.72 - 0.99 ppm
42602	Nitrogen Dioxide	1	0.027 - 0.088 ppm
42602	Nitrogen Dioxide	2	0.135 - 0.22 ppm
42602	Nitrogen Dioxide	3	0.221 - 0.51 ppm
42602	Nitrogen Dioxide	4	0.72 - 0.99 ppm
44201	Ozone	1	0.027 - 0.09 ppm
44201	Ozone	2	0.135 - 0.26 ppm
44201	Ozone	3	0.22 - 0.495 ppm
44201	Ozone	4	0.72 - 0.99 ppm

For some parameters, percent differences are utilized to reject data that could be in error as a result of transcription errors. The maximum percent differences and parameters are listed below:

Parameter Code	Maximum Percent Difference
44201	± 90 %
42602	± 90 %
42401	± 90 %
42101	± 90 %
12128	± 90 %

The percent difference is calculated using the following formula:

$$\left\{ \frac{(indicated - actual)}{actual} \right\} \times 100$$

#### **7.1.24 Other Level Actual Value**

Description: The true observation of the parameter value at a user-defined level.

Attributes: Numeric  
10-character number, including 5 decimal places (nnnnn.nnnnn)  
Optional



Coding Instructions: The accuracy data transaction format allows for the specification of an accuracy audit pair not tied to the audit levels defined for the parameter and recording mode. Place the actual value of the pair in the thirtieth delimited field.

#### **7.1.25 Other Level Indicated Value**

Description: The reported observation of the parameter value at a user-defined level.

Attributes: Numeric  
10-character number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: The accuracy data transaction format allows for the specification of an accuracy audit pair not tied to the audit levels defined for the parameter and recording mode. Place the indicated value of the pair in the thirty-first delimited field.

#### **7.1.26 Zero Span**

Description: A measurement obtained with gas from a zero concentration. Zero span is the observed value read from the instrument when the concentration of the specific parameter used to test the monitor was zero.

Attributes: Numeric  
10-digit number, including 5 decimals (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the zero span value in the thirty-second delimited field.

## 7.2 PRECISION DATA - TRANSACTION TYPE RP

The type RP transaction is used for reporting quality control information. The values reported by intermittent collocated monitors are checked for agreement among the collocated monitors. Continuous monitors are challenged with a known concentration of gas. See Section 7.0 for a list of fields on the RP transaction.

An Insert transaction is used to insert an observation into the database where it does not currently exist.

An Update transaction is used to change or delete existing observations. The actual method and actual value fields on this transaction pertain to the designated monitor, and the indicated method and indicated value fields pertain to the collocated sampler (monitor). For continuous monitors, the indicated method and indicated value fields pertain to a known gas mixture.

If both the indicated and actual values from the intermittent collocated samplers are reported to the raw data files, then only the monitor ID (ST-CNTY-SITE-PARM-POC) and the collocated POC ID are required on the RP transaction, along with the date.

In other words, precision data from collocated monitors can be submitted in two different ways:

1) One way is to include the actual and indicated values on the precision transaction. In this case, there must be a daily raw data observation value in the database for the primary monitor, and this value must match the actual value on the precision transaction. If there is a raw data observation for the collocated POC ID, then the value supplied for indicated value must match that raw data observation value.

2) The second way to submit precision data is to refer to existing daily raw data values in the database. To submit data this way, the following fields are left null: sample duration, unit, actual method, actual value, indicated method, and indicated value. The transaction identifies the primary monitor using state, county, site, parameter, and POC; and identifies the duplicate sampler using collocated POC ID, along with the same state, county, site, and parameter values as the primary monitor. In this case, the database must contain daily raw data values for both samplers for the same day. The system will populate the precision data using those raw data values for that day.

See the data input transaction formats in the Appendices for a list of required fields on each transaction format.

### 7.2.1 Transaction Type

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:      Alphanumeric  
                     2-character code  
                     Mandatory

Coding Instructions: Place a valid transaction type in the first delimited field.

### **7.2.2 Action Code**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new row into the appropriate table in the database.

U - Change one or more column values for an existing row in one or more tables.

D - Delete a row from a table(s) for the row containing the key data.

### **7.2.3 State Code**

Description:           FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C., or foreign countries.

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

### **7.2.4 County Code**

Description:           A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes:           Alphanumeric  
                          3-digit code  
                          Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

### **7.2.5 Site ID**

**Description:** A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

**Attributes:** Alphanumeric  
4-character code  
Mandatory

**Coding Instructions:** Place a four-digit numeric code in the fifth delimited field. For update and delete, a site ID value is valid if it exists in combination with state code and county code in the Sites Table.

### **7.2.6 Parameter**

**Description:** The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

**Attributes:** Alphanumeric  
5-character code  
Mandatory

**Coding Instructions:** Place a valid parameter code in the sixth delimited field. A valid parameter value exists in the Parameters Table.

### **7.2.7 POC (Parameter Occurrence Code)**

**Description:** The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

**Attributes:** Numeric  
2-digit code  
Mandatory

**Coding Instructions:** Place a valid POC value in the seventh delimited field. A POC value is valid if it is between 1 and 99.

### **7.2.8 Precision ID**

**Description:** A sequentially assigned number used to identify a particular precision check from others, when multiple checks are performed on the same day.

**Attributes:** Numeric  
2-digit number  
Mandatory

**Coding Instructions:** Place a valid precision ID number in the eighth delimited field. A precision ID value is valid if it is greater than 0.

### **7.2.9 Sample Duration**

**Description:** Identification of the length of time used to collect the raw sample value.

**Attributes:** Alphanumeric

8-digit number  
Mandatory

Coding Instructions: Place a valid sample duration code in the ninth delimited field. A sample duration value is valid if it exists in the Sample Durations Table and if it exists in combination with unit, parameter, method, and collection frequency in the Protocols Table.

#### **7.2.10 Unit**

Description: Designation of the dimensional system in which the pollutant concentration or parameter reading is expressed.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid unit code in the tenth delimited field. A unit value is valid if it exists in the Units Table and if it exists in combination with a sample duration of C, parameter, method, and composite type in the Protocols Table.

#### **7.2.11 Actual Method**

Description: Identifies the particular method for collecting and analyzing the indicated precision check value. For a collocated data pair, this represents the method used to collect and analyze the sample value from the primary sampler.

Attributes: Alphanumeric  
8 characters  
Mandatory

Coding Instructions: Place a valid method code in the eleventh delimited field.

For a precision check that is not a collocated data pair, an actual method value is valid if it exists in combination with parameter in the Sampling Methodologies Table, and if it exists in combination with sample duration, unit, and collection frequency in the Protocols Table.

For a collocated data pair, it is valid if it matches the method associated with the daily raw data point collected by the primary sampler on the precision date.

#### **7.2.12 Date**

Description: Designation of the calendar date for which the precision check is being reported.

Attributes:           Date  
                          8-character date  
                          Mandatory

Coding Instructions: Place a valid date in the twelfth delimited field. A date value is valid if:  
                          It is in the form of YYYYMMDD,  
                          It is between January 1, 1980 and the current date,  
                          It falls within a valid sample period defined for the monitor, and,  
                          If a criteria pollutant monitor is being audited, it falls within a valid reporting organization period.

### **7.2.13 Actual Value**

Description:           The true value of the parameter concentration with which the monitor was challenged. For a collocated data pair, the sample value from the primary sampler.

Attributes:            Numeric  
                          10-digit number, including 5 decimal places (nnnnn.nnnnn)  
                          Mandatory (Not required if value is stored as raw data. If reported, it must equal the value in the Raw Data Table)

Coding Instructions: Place the true value in the thirteenth delimited field.

For some parameters, upper limits have been established for precision observations, and the numeric value entered cannot exceed that maximum. The relevant maximum values and parameters are listed below:

Parameter Code	Parameter Description	Maximum Precision Value
11101	Suspended Particulate (TSP)	2000 µg/cubicmeter (25 c)
12128	Lead (TSP)	80 µg/cubicmeter (25 c)
42101	Carbon Monoxide	20 ppm
42401	Sulfur Dioxide	0.2 ppm
42602	Nitrogen Dioxide	0.2 ppm
44201	Ozone	0.2 ppm
81102	PM-10 Total 0 - 10 um	2000 µg/cubicmeter (25 c)
88101	PM-2.5 Local Conditions	2000 µg/cubicmeter (LC)

For some parameters, percent differences are utilized to reject data that could be in error as a result of transcription errors. The maximum percent differences and parameters are listed below:

Parameter Code	Parameter Description	Maximum Percent Difference
11101	Suspended Particulate (TSP)	± 160 %
12128	Lead (TSP)	± 160 %
42101	Carbon Monoxide	± 90 %
42401	Sulfur Dioxide	± 90 %
42602	Nitrogen Dioxide	± 90 %
44201	Ozone	± 90 %
81102	PM-10 Total 0 - 10 um	± 160 %
88101	PM-2.5 Local Conditions	± 160 %

For 11101, 12128, and 81102, the percent difference is calculated using the following formula:

$$\left\{ \frac{2(\textit{indicated} - \textit{actual})}{(\textit{indicated} + \textit{actual})} \right\} \times 100$$

For 42101, 42401, 42602, and 44201, the percent difference is calculated using the following formula:

$$\left\{ \frac{(\textit{indicated} - \textit{actual})}{\textit{actual}} \right\} \times 100$$

#### **7.2.14 Indicated Method**

Description: Identifies the particular method for collecting and analyzing the sample value from the duplicate sampler. Only applies to collocated data.

Attributes: Alphanumeric  
8-character code  
Optional

Coding Instructions: Place a valid method code in the fourteenth delimited field. An indicated method value is valid if it matches the method associated with the daily raw data point collected by the duplicate sampler on the precision date. (The duplicate sampler is identified by state code, county code, site ID, parameter, and collocated POC.)

#### **7.2.15 Indicated Value**

Description: The observed value of the parameter concentration with which the monitor was challenged. For a collocated data pair, the sample value from the



duplicate sampler.

Attributes:            Numeric  
                         10-digit number, including 5 decimal places (nnnnn.nnnnn)  
                         Mandatory

Coding Instructions: Place the indicated value in the fifteenth delimited field. An indicated value is valid if its percentage difference relative to the test value does not exceed the level defined for the parameter on the Parameters Table.

For some parameters, upper limits have been established for precision observations, and the numeric value entered cannot exceed that maximum. The relevant maximum values and parameters are listed below:

Parameter Code	Parameter Description	Maximum Precision Value
11101	Suspended Particulate (TSP)	2000 µg/cubic meter (25 c)
12128	Lead (TSP)	80 µg/cubic meter (25 c)
42101	Carbon Monoxide	20 ppm
42401	Sulfur Dioxide	0.2 ppm
42602	Nitrogen Dioxide	0.2 ppm
44201	Ozone	0.2 ppm
81102	PM-10 Total 0 - 10 um	2000 µg/cubic meter (25 c)
88101	PM-2.5 Local Conditions	2000 µg/cubic meter (LC)

For some parameters, percent differences are utilized to reject data that could be in error as a result of transcription errors. The maximum percent differences and parameters are listed below:

Parameter Code	Parameter Description	Maximum Percent Difference
11101	Suspended Particulate (TSP)	± 160 %
12128	Lead (TSP)	± 160 %
42101	Carbon Monoxide	± 90 %
42401	Sulfur Dioxide	± 90 %
42602	Nitrogen Dioxide	± 90 %
44201	Ozone	± 90 %
81102	PM-10 Total 0 - 10 um	± 160 %
88101	PM-2.5 Local Conditions	± 160 %

For 11101, 12128, and 81102, the percent difference is calculated using the following formula:

$$\left\{ \frac{2(\textit{indicated} - \textit{actual})}{(\textit{indicated} + \textit{actual})} \right\} \times 100$$

For 42101, 42401, 42602, and 44201, the percent difference is calculated using the following formula:

$$\left\{ \frac{(\textit{indicated} - \textit{actual})}{\textit{actual}} \right\} \times 100$$

#### **7.2.16 Collocated POC ID**

- Description: The POC of the duplicate sampler. Only applies to collocated data where the duplicate value is a recorded daily raw data point.
- Attributes: Alphanumeric  
2-character code  
Optional
- Coding Instructions: Place a valid collocated POC ID in the sixteenth delimited field. A collocated POC is valid if it exists in combination with state code, county code, site ID, and parameter on the Monitors Table, and if there is a sample value recorded for that monitor in raw data on the precision date.

#### **7.2.17 Precision Sample ID**

- Description: The unique ID number of reference sample used to challenge the instrument.
- Attributes: Alphanumeric  
10 characters  
Optional
- Coding Instructions: Place the precision check sample ID alphanumeric text in the seventeenth delimited field. No edit checks are performed on an precision sample ID value.

#### **7.2.18 Agency Performing Audit**

- Description: Identification of the agency submitting precision data resulting from a Federal Reference Method (FRM) audit of the manual method for PM<sub>2.5</sub> monitoring. This agency is commonly an EPA laboratory or independent laboratory.
- Do not use this field to identify the air pollution control agency that is responsible for the monitor, it's data, and routine precision and accuracy data, because precision data submitted on this transaction (RP) with this field

populated (Agency Performing Audit) will not be included in the summary statistical data for the monitor.

Attributes:           Alphanumeric  
                          8-character code  
                          Optional

Coding Instructions: Place a valid agency performing audit code in the eighteenth delimited field. An agency performing audit value is valid if it exists in combination with state code in the State Agencies Table.

This transaction will be rejected if the precision audit is not an FRM audit. The actual value must be blank and already have been reported by the reporting agency as raw data.

## **8.0 ANNUAL SUMMARY DATA - TRANSACTION TYPE RS**

Annual summary data is usually system-generated from the raw data contained in the system. However, the new AQS makes provision for storing summary data from agencies when they will not be submitting raw data.

Transaction type RS contains annual summary data in the following fields:

Transaction Type	Time of 2nd Highest Sample Value
Action Code	3rd Highest Sample Value
State Code	4th Highest Sample Value
County Code	5th Highest Sample Value
Site ID	Lowest Sample Value
Parameter	Arithmetic Mean
POC	Arithmetic Standard Deviation
Sample Duration	Geometric Mean
Unit	Geometric Standard Deviation
Sampling Methodology	10th Percentile
Year	25th Percentile
Exceptional Data Type	50th Percentile
Count of Observations	75th Percentile
Number of Exceptional Events	90th Percentile
Highest Sample Value	95th Percentile
Date of Highest Sample Value	98th Percentile
Time of Highest Sample Value	99th Percentile
2nd Highest Sample Value	Percent of Observations
Date of 2nd Highest Sample Value	Number < MDL

### **8.1 TRANSACTION TYPE**

Description: Specifies which batch transaction is being processed by the batch load software (i.e., which tables and columns will be updated with the data in the delimited fields).

Attributes:           Alphanumeric  
                          2-character code  
                          Mandatory

Coding instructions: Place the text RS in the first delimited field.

### **8.2 ACTION CODE**

Description: Indicates the data manipulation action to be performed by the transaction.

Attributes:           Alphanumeric  
                          1-character code  
                          Mandatory

Coding Instructions: Place the values I, U, or D in the second delimited field.

I - Insert a new summary row into the Annual Summaries Table and associated rows in the Summary Maximums, Summary Percentiles, and Summary Protocols Tables.

U - Change one or more columns within related annual summaries, summary maximums, summary percentiles, and summary protocols rows.

D - Delete an annual summary row from the Annual Summaries Table and associated rows in the Summary Maximums, Summary Percentiles, and Summary Protocols Tables.

### **8.3 STATE CODE**

Description: FIPS code that identifies one of the 50 states, U. S. territories, Washington, D.C, or foreign countries.

Attributes: Alphanumeric  
2-character code  
Mandatory

Coding Instructions: Place a valid FIPS state code in delimited field 3. A code is valid if it exists in the States Table.

### **8.4 COUNTY CODE**

Description: A FIPS code that identifies a county, or equivalent geo-political entity, such as parish or independent city. For foreign countries, it identifies the geo-political equivalent to U. S. states, such as Mexican states or Canadian provinces.

Attributes: Alphanumeric  
3-character code  
Mandatory

Coding Instructions: Place a valid county code in the fourth delimited field. A code is valid if it exists in combination with state code and city code, in the County Cities Table.

### **8.5 SITE ID**

Description: A numeric code that uniquely identifies each air monitoring site within a county. There is no requirement that site numbers be assigned continuously or in any particular order. Local organizations are thus free to allocate site numbers in any way they chose as long as there is no duplication within a county.

A specific site code is associated with a specific physical location and address. Any change in address requires a new site code to be assigned. This address change could include a change from the roof of one building to another. A change in location on the same roof should not normally require a new site code. Although an address change would routinely mean a new site code, some changes that do not change the site's location in respect to surrounding sources and its measurement scale, would require no change. An EPA Regional Office should be consulted for assistance in determining whether a new site code is required.

If a new site ID is needed for a site not operated by the air pollution control agency, that agency should be contacted to assist in the ID assignment, to ensure that the ID is unique within the county. In other words, when a new site ID is assigned, it must be different from any other site ID already existing for that combination of state code and county code.

Attributes:           Alphanumeric  
                          4-character code  
                          Mandatory

Coding Instructions: Place a four-digit site ID in the fifth delimited field. A site ID value is valid if it exists in combination with state code and county code in the Sites Table.

## **8.6   PARAMETER**

Description:           The code assigned to the parameter measured by the monitor. Parameters may be pollutants or non-pollutants.

Attributes:           Alphanumeric  
                          5-character code  
                          Mandatory

Coding Instructions: Place a valid parameter code in the sixth delimited field. A parameter value is valid if it exists in combination with state code, county code, site ID, and POC in the Monitors Table.

## **8.7   POC (Parameter Occurrence Code)**

Description:           The code used to distinguish between multiple monitors at the same site that are measuring the same parameter. For example, the first monitor established to measure CO at a site could have a POC of 1. If an additional monitor were established at the same site to measure CO, that monitor could have a POC of 2. However, if a new instrument were installed to replace the original instrument used as the first monitor, that would be the same monitor and it would still have a POC of 1.

For criteria pollutants, data from different sampling methods should only be stored under the same POC if the sampling intervals are the same and the methods are reference or equivalent. For sites where duplicate sampling is being conducted by multiple agencies or by one agency with multiple samplers, multiple POCs must be utilized to store all samples.

For non-criteria pollutants, data from multiple sampling methods can be stored under the same POC if the sampling intervals are the same and there is only one sample for the time reported. If multiple open path monitors are reporting data for the same parameter, each open path would be assigned a different POC.

Attributes:            Numeric  
                         2-digit code  
                         Mandatory

Coding Instructions: Place a valid POC value in the seventh delimited field. A POC value is valid if it exists in combination with state code, county code, site ID, and parameter on the Monitors Table.

## **8.8 SAMPLE DURATION**

Description:            Identification of the length of time used to collect all the raw data sample values being summarized.

Attributes:            Alphanumeric  
                         8-character code  
                         Mandatory

Coding Instructions: Place a valid sample duration code in the eighth delimited field. A sample duration value is valid if it exists in the Sample Durations Table and if it exists in combination with unit, parameter, and method in the Protocols Table.

## **8.9 UNIT**

Description:            Designation of the dimensional system in which the summary values are expressed.

Attributes:            Alphanumeric  
                         3-character code  
                         Mandatory

Coding Instructions: Place a valid unit code in the ninth delimited field. A unit value is valid if it exists in the Units Table and if it exists in combination with sample duration, parameter, and method in the Protocols Table.

## **8.10 SAMPLING METHODOLOGY**

Description:	Identifies the particular method for collecting and analyzing the raw data values that are the basis of the summary values.
Attributes:	Alphanumeric 8-character code Mandatory
Coding Instructions:	Place a valid method code in the tenth delimited field. A method value is valid if it exists in combination with parameter in the Sampling Methodologies Table, and if it exists in combination with sample duration, unit, and collection frequency in the Protocols Table.

## **8.11 YEAR**

Description:	Indication of the year whose raw data is summarized.
Attributes:	Numeric 4 digits Mandatory
Coding Instructions:	Place a valid year number in the eleventh delimited field. A year value is valid if it is in the format of YYYY and there is a valid sampling period defined for the monitor in that year.

## **8.12 EXCEPTIONAL DATA TYPE**

Description:	Indication of whether exceptional data exists in the year being summarized, and whether such exceptional data is included in the reported summary values.
Attributes:	Numeric 1-digit code Mandatory
Coding Instructions:	Place a valid exceptional data type number in the twelfth delimited field. An exceptional data type value is valid if it exists in the Exceptional Data Types Table.

## **8.13 COUNT OF OBSERVATIONS**

Description:	The number of raw data values that are the basis for the summary values.
Attributes:	Numeric 5 digits



Optional

Coding Instructions: Place a valid count of observations in the thirteenth delimited field. A count of observations value is valid if it is greater than 0.

#### **8.14 NUMBER OF EXCEPTIONAL EVENTS**

Description: The number of data points in the summarized data set that were qualified by exceptional events.

Attributes: Numeric  
5 digits  
Optional

Coding Instructions: Place a valid number of exceptional events value in the fourteenth delimited field. A number of exceptional events value is valid if:  
1) it is 0 and the exceptional data type is 0 or 1; or  
2) it is greater than 0 and less than or equal to count of observations, and exceptional data type is 2.

#### **8.15 HIGHEST SAMPLE VALUE**

Description: The highest sample value in the yearly sample value set.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place a valid highest sample value in the fifteenth delimited field. A highest sample value is valid if it is greater than or equal to the second, third, fourth, and fifth highest values reported on the transaction record.

#### **8.16 DATE OF HIGHEST SAMPLE VALUE**

Description: The earliest date on which the highest sample value in the yearly data set was reported.

Attributes: Alphanumeric  
8 characters  
Optional

Coding Instructions: Place a valid Date of highest sample value in the sixteenth delimited field. A date of highest sample value is valid if it is in the format of YYYYMMDD where the year portion is equal to year.

### **8.17 TIME OF HIGHEST SAMPLE VALUE**

Description:	The time of day on which the highest sample value in the yearly data set was reported.
Attributes:	Alphanumeric 5 characters Optional
Coding Instructions:	Place a valid time of highest sample value in the seventeenth delimited field. A time of highest sample value is valid if it is in the form of HH:MM, where HH is between 00 and 23, and MM is between 00 and 59.

### **8.18 SECOND HIGHEST SAMPLE VALUE**

Description:	The second highest sample value in the yearly sample value set.
Attributes:	Numeric 10-digit number, including 5 decimal places (nnnnn.nnnnn) Optional
Coding Instructions:	Place a sample second highest sample value in the eighteenth delimited field. A second highest sample value is valid if it is not greater than highest sample value, and is greater than or equal to the third, fourth, and fifth highest values reported on the transaction record.

### **8.19 DATE OF SECOND HIGHEST SAMPLE VALUE**

Description:	If the second highest value is less than the highest, this identifies the earliest date on which the second highest sample value in the yearly data set was reported; if the second highest is equal to the highest, this identifies the second earliest date on which the value was reported.
Attributes:	Alphanumeric 8 characters Optional
Coding Instructions:	Place a valid date of second highest sample value in the nineteenth delimited field. A date of second highest sample value is valid if it is in the format of YYYYMMDD where the year portion is equal to year. If the highest sample value and second highest sample value are equal, then date of second highest sample must be greater than date of highest sample value.

## **8.20 TIME OF SECOND HIGHEST SAMPLE VALUE**

Description:	The time of day on which the second highest sample value in the yearly data set was reported.
Attributes:	Alphanumeric 5 characters Optional
Coding Instructions:	Place a valid time of highest sample value in the twentieth delimited field. A time of highest sample value is valid if it is in the form of HH:MM, where HH is between 00 and 23, and MM is between 00 and 59.

## **8.21 THIRD HIGHEST SAMPLE VALUE**

Description:	The third highest sample value in the yearly sample value set.
Attributes:	Numeric 10-digit number, including 5 decimal places (nnnnn.nnnnn) Optional
Coding Instructions:	Place a third highest sample value in the twenty-first delimited field. A third highest sample value is valid if it is not greater than second highest sample value, and is greater than or equal to the fourth and fifth highest values reported on the transaction record.

## **8.22 FOURTH HIGHEST SAMPLE VALUE**

Description:	The fourth highest sample value in the yearly sample value set.
Attributes:	Numeric 10-digit number, including 5 decimal places (nnnnn.nnnnn) Optional
Coding Instructions:	Place a fourth highest sample value in the twenty-second delimited field. A fourth highest sample value is valid if it is not greater than third highest sample value, and is greater than or equal to the fifth highest value reported on the transaction record.

## **8.23 FIFTH HIGHEST SAMPLE VALUE**

Description:	The fifth highest sample value in the yearly sample value set.
Attributes:	Numeric 10-digit number, including 5 decimal places (nnnnn.nnnnn) Optional

Coding Instructions: Place a fifth highest sample value in the twenty-third delimited field. A fifth highest sample value is valid if it is not greater than fourth highest sample value.

#### **8.24 LOWEST SAMPLE VALUE**

Description: The lowest sample value in the yearly sample value set.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place a lowest sample value in the twenty-fourth delimited field. A lowest sample value is valid if it is not greater than the lowest of the highest values reported on the transaction record.

#### **8.25 ARITHMETIC MEAN**

Description: The measure of central tendency obtained from the sum of the observed pollutant data values in the yearly data set divided by the number of values that comprise the sum for the yearly data set.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the arithmetic mean in the twenty-fifth delimited field.

#### **8.26 ARITHMETIC STANDARD DEVIATION**

Description: The measure of the dispersion about the central tendency of a pollutant that is the square root of the arithmetic mean of the squares of the variation of each data value from the arithmetic mean of the data values of the yearly data set.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the arithmetic standard deviation in the twenty-sixth delimited field.

#### **8.27 GEOMETRIC MEAN**

Description: The measure of central tendency obtained from the sum of the logarithms of observed sample values in the yearly data set, divided by the number of

values, with that result applied as an exponent to 10.

Attributes:           Numeric  
                          10-digit number, including 5 decimal places (nnnnn.nnnnn)  
                          Optional

Coding Instructions:   Place the geometric mean in the twenty-seventh delimited field.

## **8.28   GEOMETRIC STANDARD DEVIATION**

Description:           The measure of the dispersion about the central tendency of a pollutant that is based on the variation between geometric mean of a sample of values and the logarithms of the values themselves.

Attributes:           Numeric  
                          10-digit number, including 5 decimal places (nnnnn.nnnnn)  
                          Optional

Coding Instructions:   Place the geometric standard deviation in the twenty-eighth delimited field.

## **8.29   PERCENTILE 10**

Description:           The sample value occurring in the tenth percentile of the yearly data set when sorted from lowest to highest.

Attributes:           Numeric  
                          10-digit number, including 5 decimal places (nnnnn.nnnnn)  
                          Optional

Coding Instructions:   Place the sample value in the twenty-ninth delimited field.

## **8.30   PERCENTILE 25**

Description:           The sample value occurring in the twenty-fifth percentile of the yearly data set when sorted from lowest to highest.

Attributes:           Numeric  
                          10-digit number, including 5 decimal places (nnnnn.nnnnn)  
                          Optional

Coding Instructions:   Place the sample value in the thirtieth delimited field.

### **8.31 PERCENTILE 50**

Description: The sample value occurring in the fiftieth percentile of the yearly data set when sorted from lowest to highest.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the sample value in the thirty-first delimited field.

### **8.32 PERCENTILE 75**

Description: The sample value occurring in the seventy-fifth percentile of the yearly data set when sorted from lowest to highest.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the sample value in the thirty-second delimited field.

### **8.33 PERCENTILE 90**

Description: The sample value occurring in the ninetieth percentile of the yearly data set when sorted from lowest to highest.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the sample value in the thirty-third delimited field.

### **8.34 PERCENTILE 95**

Description: The sample value occurring in the ninety-fifth percentile of the yearly data set when sorted from lowest to highest.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the sample value in the thirty-fourth delimited field.

### **8.35 PERCENTILE 98**

Description: The sample value occurring in the ninety-eighth percentile of the yearly data set when sorted from lowest to highest.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the sample value in the thirty-fifth delimited field.

### **8.36 PERCENTILE 99**

Description: The sample value occurring in the ninety-ninth percentile of the yearly data set when sorted from lowest to highest.

Attributes: Numeric  
10-digit number, including 5 decimal places (nnnnn.nnnnn)  
Optional

Coding Instructions: Place the sample value in the thirty-sixth delimited field.

### **8.37 PERCENT OF OBSERVATIONS**

Description: The percent of actual data values that were reported compared to the number of data values that could have been reported for the year.

Attributes: Numeric  
10-digit number, including 4 decimal places (nnnnnn.nnnn)  
Optional

Coding Instructions: Place the observation percentage in the thirty-seventh delimited field.

### **8.38 NUMBER LESS THAN MINIMUM DETECTABLE VALUE**

Description: Represents the number of substitutions of one-half the Method Detectable Limit value for the year.

Attributes: Numeric  
5 digits  
Optional

Coding Instructions: Place the count of observations with one-half the MDL in the thirty-eighth delimited field.